



somewhat bellying, trifid. Corolla yellow, rather large.

Native of Austria¹.]

14. This rises with a woody stalk six or seven feet high, sending out many angular lateral branches. The flowers are produced in short bunches from the sides of the branches; they are small, yellow, and appear in July and August, but are not succeeded by seeds in England. It grows naturally in the islands of the Archipelago.

[15. This is an erect shrub, branching very much, three feet high, with a trunk the thickness of a finger, round and upright. Leaves quite entire, subpetioled, pale beneath, somewhat villose on both sides, scarcely half an inch in length. Flowers few in terminating racemes, on short pedicels, smelling sweet. Legumes hirsute. Seed few^m.

Found in the island of Madeira by Masson. Introduced here in 1777ⁿ.

16. Found in the Canary islands by Masson. Introduced in 1779. It flowers in July and August^o.

17. Leaves ternate, with ovate-oblong leaflets, (Linneus says, lanceolate, never unfolding,) on very short petioles. Racemes simple. Flowers peduncled, solitary, supported by one or two subulate bractes. Before the corolla opens the whole is tawny, but when open, the standard about the middle only is of that colour; the rest is then yellow: the calyx is also tawny. Linneus observes, that the stamens have large and small anthers alternate.

Native of the South of France, Spain, and Madeira. Cultivated in 1763, by Mr. James Gordon. It flowers in July and August^p.

18. Cultivated in 1760, by Mr. James Gordon. It flowers in May and June^q.]

PROPAGATION AND CULTURE.

1. The Laburnum is easily propagated by seeds, which the trees produce in great plenty. If these are sown upon a common bed in March, the plants will appear by the middle or end of April, and will require no other care but to be kept clean from weeds during the following summer; and if the plants are too close together, they may be transplanted the autumn following, either into a nursery, where they may grow a year or two to get strength, or into the places where they are designed to remain: where people would cultivate them for their wood, it will be the best way to sow the seeds upon the spot where they are intended to grow, because these trees send out long, thick, fleshy roots to a great distance, which will penetrate gravel or rocks; and if these roots are cut or broken, it greatly retards their growth; therefore when they are not sown upon the intended spot, they should be transplanted thither young, otherwise they will not grow to near the size; though where they are only designed for ornament, the removing the plants twice will stop their growth, and cause them to be more productive of flowers; but all trees intended for timber, are much better sown on the ground where they are designed to stand, than if they are transplanted.

If the seeds of these trees are permitted to scatter in winter, the plants will rise in great plenty the following spring, so that a few trees will soon supply any person with a sufficient number of the plants.

There is a variety with variegated leaves, which can only be continued by cuttings or layers: the cuttings should be planted in autumn, when the leaves begin to fall; and the plants must have a poor soil, for in good ground they are apt to become plain.

The Laburnum will thrive upon many different soils, and in such situations as few other trees will make any progress. [It will grow in a poor hungry soil, but where there is any depth it will make great progress.

¹ Linn. suppl.
^o Hort. kew.

^m Jacquin.
^p Ibid.

ⁿ Hort. kew.
^q Ibid.

Mr. Boucher recommends the seedling plants to be removed to the nursery in February or March, shortening their roots, which are not injured by cutting them freely when young; and planting them two feet and a half distant from row to row, and a foot asunder in the rows, there to remain two seasons. Hence they may be removed either in October or February, still reducing the downright roots, and smoothing the extremities of the spreading ones; pruning off all ill-placed side branches, but leaving some of the smallest at proper distances. The rows may now be five feet apart; the plants two feet asunder; and here they may remain three or four years.

These directions are more adapted to raising trees for ornamental plantations than for use.

If they are designed for poles, they should be kept to smaller distances. The autumn after they are sowed, they may be pricked out three or four inches apart, and the following spring to the distance of nine inches or a foot, there to remain three or four years, according to their growth, when they may be removed, being fourteen or sixteen feet high, to the places where they are designed to remain, only shortening the lateral roots, and just topping the tap root. Thus they will run up with few lateral branches and small heads, to the height of from twenty to forty feet.]

2, 3, 7, 9, 11, 12, 13, 17. These may be propagated by seeds, which should be sown upon a bed of light earth in March, covering them about one third of an inch with fine screened mould; in the beginning of May the plants will appear, when they must be carefully weeded, and during the following summer they must constantly be kept clean, which is all the culture they require till autumn, when it will be very proper to arch the bed over with hoops, that in frosty weather the plants may be covered with mats, to prevent their tender shoots from being killed; for as these young plants are apt to continue growing later in the autumn than those which are become woody, they are much more susceptible of cold; therefore where there is not some care taken to cover them, if the winter should prove severe, many of them may be entirely destroyed, and the others killed to the ground. The spring following, after the danger of hard frost is over, the plants should be carefully taken up, and planted out at the distance of one foot, row from row, and six inches asunder in the rows; this should be in a sheltered situation, and as these plants do not shoot till late in the spring, they need not be transplanted before the end of March, or the beginning of April; and if the season should then prove warm and dry, it will be proper to give the plants some water to settle the earth to their roots: and if the drought continue, and the waterings are three times repeated at a week's interval from each, it will be of service to the plants. After they have taken new root, they will require no farther care, but to keep them constantly clean from weeds; in this nursery the plants may remain two years, in which time they will have acquired strength enough to be transplanted where they are to remain.

4. This being very hardy, will thrive in any situation, and almost on any soil that is not too wet. It is propagated by seeds, which may be sown upon a common bed of light earth in the spring; in autumn the plants may be removed into a nursery in rows, one foot apart, and at six inches distance in the rows, where they may remain two years to acquire strength, and should then be removed to the places where they are designed to grow.

5. This plant grows only in hot countries, and cannot be preserved in England, but in the bark-stove. It rises easily from seeds in a hot-bed, and will grow three or four feet high the first year, provided it have a proper heat; and the second year the plants will produce flowers and seeds. They must be treated in the same manner as other tender plants from the same countries; should have little water in winter; and in summer should have a large

large share of air admitted to them in warm weather.

6. The Evergreen *Cytisus* may be propagated in the same manner as has been directed for the second sort; but as it is sometimes killed in severe frosts, it should be planted only on a dry soil, and in a warm situation: it is also very difficult to remove, when grown to any size, because it shoots long roots deep into the ground, and when these are broken or cut, the plant seldom survives it.

8. This also is propagated by seeds, which should be sown early in april, on a border of strong ground exposed to the east; for if they are sown where they have full sun, the plants will not thrive. This requires a cold situation and a strong soil.

14. This is propagated by cuttings, which if planted on a bed of light earth the beginning of july, and closely covered with a bell or hand-glass shaded from the sun in the middle of the day, will put out roots by the middle or end of september; when they should be carefully taken up, planting each in a separate small pot, carefully watering and shading them until they have taken new root, after which they may be exposed in a sheltered situation until the end of october, when they must be removed into shelter, for they are too tender to live in the open air in England.

[10, 15, 16, 17. Will not bear the open air of our climate, but require the protection of a green-house or dry stove.

CYTISUS. See *Antyllis*, *Aspalathus*, *Crotalaria*, *Ebenus*, *Genista*, *Hedysarum*, *Indigofera*, *Liparia*, *Medicago*, *Ononis*, *Robinia*, *Spartium*.

D.

DABOECIA. See *Andromeda*.

DACTYLIS. (*Δακτυλῖς*, *digitalis*, having spikes long and slender, like the finger.

Lin. gen. n. 86. *Reich.* 92. *Schreb.* 117. *Juss.* 31.

Class. 3. 2. *Triandria Digynia*.

Nat. order of Grasses.

GENERIC CHARACTER.

CAL. Glume many-flowered, two-valved, collecting the floscules into an ovate-oblong spicule: valves concave, keeled, on one side convex broader half-ovate, on the other narrow; the inner largest.

COR. Two-valved: the lower valve larger concave acute, mucronate or awned; the inner lanceolate, acutely bifid, scarcely shorter than the lower.—*Nectaries* two lanceolate, acuminate, gibbous at the base.

STAM. Filaments three, capillary, longer than the corolla. Anthers oblong, two-forked.

PIST. Germ ovate. Styles two, spreading. Stigmas feathered.

PER. none. Corolla including the seed, and dropping it.

SEED single, oblong, grooved on one side.

ESSENTIAL CHARACTER.

Cal. two-valved, compressed; one valve larger, keeled—(valves keeled, the inner largest. *Sch.*)

SPECIES.

1. *Dactylis cynosuroides.* American Cock's-foot Grass.

Lin. spec. 104. *Reich.* 196. *fasc.* 1. t. 9. *Gron. virg.* 134, 135.

Spikes scattered numerous, flowers closely imbricate and pointing one way; culm erect.

2. *Dactylis glomerata.* Rough Cock's-foot Grass.

Lin. spec. 105. *syft.* 116. *Reich.* 197. *fl. suec.* n. 87. *Huds. angl.* 43. *With.* 94. *Relb. cantabr.* n. 74. *Pollich pal.* n. 98. *Neck. gallob.* 58. *Leers herb.* n. 57. t. 3. f. 3. *Krock. files.* n. 148. *Schreb. gram.* 72. t. 8. f. 2.

Fl. dan. t. 743. *Barr. ic.* 26. f. 1, 2. *Fl. rust.* t. 14. *Mus. rust.* 5. t. 5.

Bromus. *Hall. belv.* 1512.

B. glomeratus. *Scop. carn. n.* 111.

Gramen spicatum. fol. aspero. *Baub. pin.* 3. *prodr.* 9. f. 1. *theat.* 45. 1. *Scheuch. gram.* 299. t. 6. f. 15.

G. asperum. *Baub. hist.* 2. 467. 1. *Raii hist.* 1287. *syn.* 400.

G. panic. torosa pratense asperum. *Mor. hist.* f. 8. t. 6. f. 38.

Panicle turned to one side, glomerate.

3. *Dactylis ciliaris.*

Lin. syst. 116. *Reich.* 197. *mant.* 185.

Spike in a head turned to one side, calyxes three-flowered, stem creeping.

4. *Dactylis lagopoides.*

Lin. syst. 116. *Reich.* 197. *mant.* 33. 557. *Burm. ind.* t. 10. f. 1.

Spikes roundish pubescent, culm prostrate branched.

5. *Dactylis capitata.*

Lin. syst. 116. *suppl.* 110.

Spikes in a head even, culm prostrate branched.

6. *Dactylis stricta.* Sea Cock's-foot Grass.

Ait. hort. kew. 104.

D. cynosuroides. *Loefl. itin.* 115. *Huds. angl.* 43. *With.* 93.

Spartum effexianum, spica gemina clausa. *Petiv. conc. gram.* 35. *Raii hist* 3. *app.* 248. *syn.* 393.

Spikes terminating usually twin, flowers remote pressed close, culms and leaves strict.

7. *Dactylis patens.* Spreading Cock's-foot Grass.

Ait. hort. kew. 104.

Spikes scattered, turned one way, few; flowers closely imbricate; culm decumbent, leaves spreading very much.

DESCRIPTIONS, &c.

1. Culm two feet high, reedy. Leaves on the culm six, broad, longer than the culm, very glossy, scabrous about the edge, bent in, more glaucous on their inner surface. Spikes six or more, diverging, chaffy: floscules scabrous behind: calyxes one-flowered, scabrous on the keel, mucronate, longer than the floscule sessile, turned one way: pistils villose, very long.—Native of Virginia and Canada. Perennial.

2. Root perennial. Culms from two to three feet high, ancipital, naked and rugged at top, having four or five smooth, purplish knots or joints, and three leaves, with ancipital villose or rugged sheaths, sharply keeled. Leaves six inches or more in length, and three or four lines broad, spreading, somewhat glaucous, very rugged on both sides with extremely minute spinules. Ligule white, oblong, obtuse, cloven. Panicle close, often coloured: peduncles solitary, alternate, angular, stiff, rugged, with a callous tumour at the base, twice and thrice cloven; the lowest (sometimes two) more remote, longer, spreading, at length becoming horizontal and even somewhat reflex. Spikelets all turned the same way, subsessile, twin-glomerate, oblong, very obtuse, having two, three, and sometimes four flowers, pressed close, and during florescence diverging. Calyx pubescent, frequently ciliate, rugged, having a short awn; inner valve twice as large as the outer, awned, equal to the florets if there be only two, but shorter if there be more. Florets rugged, edged with white, obtuse, with a short awn at the end, in the last floret this is very short, and sometimes there is none: inner valve scarcely shorter than the outer, with the end sharply cloven: nectaries two lanceolate-acuminate: filaments twice the length of the corolla; anthers yellow or purple, and afterwards white. Seed dropping.

There is some difference of opinion respecting the genus of this grass. Scopoli at first made it a *Poa*, but afterwards, following Haller, he ranged it among the *Bromi*. He says it is not a *Poa*, because it has one awned petal; not a *Cynosurus*, because the calyx is many-flowered, and it has no bractes; not a *Dactylis*, because the calyx is very acute.

* *Linn. spec.*

^b *Leers.*

Pollich mentions a viviparous variety; and Mr. Woodward has observed it to be so in rainy seasons. This is usual in other grasses on lofty situations, where they are frequently drenched by the clouds.

No grass is more common than this; from its flourishing particularly under the shade of trees, whence it has been called *Orchard-grass*. It flowers from June to August.

It is a rough coarse grass, and hence has the names of *Rough-grass* and *Hard-grass*, but it is extremely hardy and productive; Mr. Curtis adds that it is rather early. Its flourishing under the drip of trees may be a recommendation, but the head is so large that in heavy rains it is apt to be laid. It should always be cut whilst young and tender either for hay or fodder.

3. Root filiform, creeping with long white fibres. Culms a palm high, ascending, very simple, even, with one joint. Root-leaves involute, filiform, even, the length of the culm; stem-leaf one, even, the length of the head; sheath somewhat bellying. Head terminating, ovate, with many sessile flowers. Glume of the calyx three-flowered, compressed, mucronate, the length of the corolla, having scattered hairs on the back under the tip. Outer glume of the corolla ovate, striated, bearded below with white hairs.

Native of the Cape of Good Hope^c.

4. Root perennial, fibrous. Culms a palm high, several, covered on every side with the sheaths of leaves. Leaves spreading, subulate like spines, contracted at the base, narrower than their sheaths. Spike glomerate, ovate, pubescent. Flowers sessile, many together, pointing nearly one way: calyx eight-flowered, but often only four-flowered, nearly equal; valves acute, stiff, striated: outer valve of the corolla stiff, striated, acute; inner involute, coloured.

Native of the fields of Malabar^d.

5. Root perennial. Leaves even, three on the culm, which is of the thickness of a fowl's quill, a foot and half in height, and even. Panicle in form of a spike, as it were conglomerate, narrower at top, a palm in length, the colour of chaff. Flowers always twin, depressed. Calyx nearly the length of the flower, containing about five flowers, the outer valve much attenuated: corolla oblong, awnless.

Found at the Cape by Sparrmann^e.

6. The calyx contains one floret only, which has but one style, which is longer than the stamens. The structure of the pistil marks an affinity with *Nardus*, which is confirmed by its habit^f.

Marshes in Essex, and other parts of the sea-coast, very common; also in Portugal.

It is perennial, and flowers from July to September.—This was confounded with the first species, but is certainly distinct from it.

7. Native of North America. Introduced 1781, by Mr. William Curtis. It is perennial, and flowers in July and August^g.

PROPAGATION AND CULTURE.

See GRASS.]

DACTYLIS. See *Phalaris* and *Phoenix*.

DACTYLON. See *Panicum*.

DAFFODIL. See *Narcissus*.

— Sca. See *Pancratium*.

DAHLBERGIA. See *Dalbergia*.

[DAIS. (*Dais*, *epulum*, *pugna*, *tæda*.)

Lin. gen. n. 540. Reich. 588. Schreb. 740.

Gærtn. t. 39. Juss. 77. Authore Dav. Royno.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Vepreculæ*.—Thymelææ Juss.

GENERIC CHARACTER.

CAL. Involucre four-leaved, sessile—many-flowered: leaflets scarious, erect. Perianth none.

COR. one-petalled, funnel-form, longer than the involucre. Tube filiform, rude. Border five-cleft: divisions lanceolate, obtuse.

^c Linn. mant.

^d Ibid.

^e Linn. suppl.

^f Stokes in With.

^g Hort. kew.

STAM. Filaments ten, inserted into the throat, shorter than the border: the alternate ones shorter. Anthers simple.

PIST. Germ somewhat oblong; growing on the base of the corolla. Style filiform, length of the tube. Stigma globose, ascending.

PER. Berry ovate, one-celled.

SEED single, ovate.

OBS. In *D. octandra* a fifth part of the number is wanting.

ESSENTIAL CHARACTER.

Invol. four-leaved. Cor. four or five-cleft. Berry one-seeded. (Nut superior, one-celled; G.)

SPECIES.

1. *Dais cotinifolia*: *Cotinus-leaved Dais*.

Lin. spec. 556. Reich. 2. 284. Jacqu. ic. collect.

1. 146. Gærtn. fruct. 187. Curtis magaz. 147.

Flowers five-cleft ten-stamened.

2. *Dais octandra*.

Lin. syst. 403. Reich. 2. 284. mant. 69. Burm.

ind. t. 33. f. 2.

Flowers four-cleft eight-stamened.

3. *Dais disperma*.

Forst. flor. austr. n. 192.

Flowers eight and ten-stamened; leaves ovate-lanceolate, acuminate, nerveless.

DESCRIPTIONS, &c.

1. Leaves opposite, obovate, quite entire, smooth, petioled. Flowers in a bunch aggregate, terminating, pubescent; with a gemmaceous, four-valved involucre. It is allied to *Passerina*^a. The fruit is a small nut of an ovate-acuminate form, with a thin bark over it, and clothed with the permanent corolla: the epidermis is membranaceous, pale, diaphanous, thickening on each side into a prominent, whitish edge, easily separating: shell bony, thin, brittle, livid-white on the outside, black within; one-celled and valveless^b.

Native of the Cape of Good Hope.—Introduced 1776, by Mr. James Gordon^k; but has long been in the Dutch gardens.

2. Leaves opposite, elliptic-oblong, acuminate, petioled, even. Involucre one or two, terminating, peduncled, shorter than the flowers, which are smooth. Stamens placed upon the tube, and longer than the corolla.—Native of India^l.

3. Native of Tongatabu^m.

PROPAGATION AND CULTURE.

1. This ornamental green-house shrub of the deciduous kind, not having yet produced any perfect seeds with us, as it does in Holland, and no other way having been yet discovered of increasing it freely, it keeps up a very high price among the nursery-menⁿ.]

DAISY. See *Bellis*.

[—, Great or Ox-eye. See *Chrysanthemum*.

— Blue. See *Globularia*.

DALBERGIA.

Lin. gen. Schreb. n. 1158. Suppl. 52. Juss. 362.

Ecastaphyllum. Brown. jam. 299. t. 32. f. 1.

Berg. alt. holm. 1769. t. 3.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceæ* or *Leguminosæ*.

GENERIC CHARACTER.

CAL. Perianth one-leaved, bell-shaped, five-toothed: teeth bluntish.

COR. papilionaceous. Standard large, ascending, cordate-ovate, emarginate-retuse, with a linear claw. Wings oblong, straight, obtuse, with a reversed tooth above. Keel scarcely shorter than the wings, two-parted at the base, straight, obtuse.

STAM. Filaments ten, united in two equal lateral bodies, free at top, ascending. Anthers roundish.

PIST. Germ oblong-compressed, pedicelled. Style subulate, ascending or reflex. Stigma simple.

PER. Legume oblong, compressed-flat, pedicelled, not gaping, one-celled?

SEED single or few, remote, kidney-form, compressed.

^a Linn. spec.

^b Gærtner.

^k Hort. kew.

^l Linn. mant.

ⁿ Forster.

^m Curtis.

OBS. The essence of the genus consists in having the filaments united in two equal vertical bodies, separated at top and bottom.

ESSENTIAL CHARACTER.

Filaments two four-cleft at top. Fruit pedicelled, not opening, leguminose, membranaceous-compressed.

SPECIES.

1. *Dalbergia Lanceolaria*.
Lin. syst. 641. suppl. 316.
Noel-valli. Rheede malab. 6. 39. t. 22.
Leaves pinnate; leaflets elliptic hairy underneath; fruits lanceolate.
2. *Dalbergia Monetaria*.
Lin. syst. 641. suppl. 317.
Leaves ternate, leaflets smooth, ovate; fruits oval veinless.

DESCRIPTIONS, &c.

1. This is a tree, with wand-like pendulous hairy branchlets. Leaves alternate, unequally pinnate; leaflets elliptic, alternate, remote, from ten to sixteen, quite entire, waved, smooth underneath, hirsute above, veinless, small: petioles hairy. Racemes axillary, hairy, branched. Flowers ferruginous. Calyx rough with hairs; the teeth almost equal. Corolla larger than in the second sort: standard more dilated. Filaments two, lateral, four-cleft at the end, with the rudiment of a fifth on each side, but without any loose or single filament, such as the other species has. Style bent upwards. The fruit is a membrane, exactly the figure of a little lance, attenuated at the base, not opening, not divisible into two skins by a knife, the length of a finger or less. In the middle of this membrane a single compressed oval seed is immersed; if there are two seeds, they are placed at a distance from each other longitudinally.

Native of Malabar and Ceylon, and observed there by Koenig.

2. This is a shrub. Leaflets petioled, quite entire, veined, acuminate, alternate. Peduncles several, axillary, spoked, directed one way, toothed at bottom where the flowers have fallen. Flowers extremely minute, white. Calyx blunt, with five small equal teeth. Filaments two, lateral, equal, four-cleft at top, with a third which is single below the germ; hence there are nine filaments: anthers nine, globular, twin. Style filiform, erect: stigma headed. The fruit is of an oval form, like a piece of coin, compressed, cartilaginous within, one-celled, deciduous, not opening. Seed single, compressed, kidney-form. The root when cut yields a purple juice. The wood is red. It yields a resin that resembles Dragon's-blood.—Native of Surinam, in wet places^a.

DALEA. See *Eupatorium*, *Lippia*, and *Psoralea*.]

DALECHAMPIA. (Given by Plumier, in honour of *Jacobus Dalechampi*, a physician of Lyons; a commentator on *Dioscorides* and *Pliny*; author of *Historia Plantarum*, 1587.)

Lin. gen. n. 1081. Reich. 1179. Schreb. 1460.

Plum. 38. Jacqu. amer. 252. Juss. 392.

Class. 21. 9. Monoecia Monadelphia.

Nat. order of *Tricoccæ*.—*Euphorbiæ*. Juss.

GENERIC CHARACTER.

Involucre common exterior smaller: leaflets four, lanceolate, spreading.

Interior very large: leaflets two, heart-shaped, three-cleft, converging.

* For the male flowers a footstalked umbel, simple, ten-flowered, shorter than the interior involucre.

CAL. Involucel two-leaved, erect, blunt: leaflets somewhat three-lobed.

Scales numerous, obovate, pressed in an imbricate manner to the exterior side of the involucel, and of the same length with it.

Perianth proper, five-leaved, footstalked; leaflets ovate, acute; deciduous.

COR. none.

^a Linn. suppl.

STAM. Filaments very many, growing together into a column longer than the calyx. Anthers roundish.

* In the females three florets within the same common involucre, approximate to the inferior side.

CAL. Involucel three-leaved; leaflets emarginate, small. Perianth proper, inferior: leaflets eleven, linear, toothed, acute, converging, permanent.

COR. none.

PIST. Germ roundish, shorter than the perianth. Style filiform, ascending, length of the males. Stigma somewhat headed, perforated.

PER. Capsule roundish, three-berried, three-celled; cells two-valved.

SEED solitary, globose.

ESSENTIAL CHARACTER.

Outer common involucre with four leaflets; inner with two trifid leaves.

MALE. Umbellule ten-flowered: involucel two-leaved; with numerous chaffs. Proper perianth five-leaved. Cor. none. Filaments very many, connate.

FEM. Floscules three. Involucel three-leaved. Proper perianth with eleven leaflets. Cor. none. Style filiform. Caps. tricoccus.

SPECIES.

1. *Dalechampia colorata*. Coloured *Dalechampia*.

Lin. syst. 862. suppl. 421.

Leaves quite entire.

2. *Dalechampia scandens*. Climbing *Dalechampia*.

Lin. spec. 1423. syst. 862. Reich. 4. 181. suppl.

421. mant. 496. hort. cliff. 485. Jacqu. amer.

252. t. 160. pict. 123. t. 239. Plum. gen. 17.

amer. 89. t. 101. (Lupulus).

Leaves trifid ferrate.

DESCRIPTIONS, &c.

[1. This resembles the second species, and the leaves are three-lobed, but less deeply cut, and not ferrate. The involucre is more oblong, resembling a petal, or coloured, not cordate at the base or green.

Found in New Granada, by Mutis^b.

2. Stem branched, hairy, the hairs standing out. Leaves alternate, petioled, remote, cordate-three-parted, much veined, wrinkled, ferrate, pubescent, lobes lanceolate: petioles round, slightly channelled, the length of the leaf: the genuine stipules semi-cordate, reflex, short; besides these there are two spurious stipules from the sinus at the base of the leaf, which are subulate, erect and small. Peduncle axillary, solitary, very short^c.

Native of the West Indies. Introduced 1785 by Mr. Alexander Anderson. It flowers in June and July^d.

Mr. Miller has a plant under the name of *Dalechampia scandens*,] a native of Jamaica, whence Dr. Houstoun sent him the seeds, which succeeded, flowered, and perfected seeds in the Chelsea garden. It seems to be different from the species here set down; having a smooth fruit, with a hispid calyx (or involucre). Mr. Miller describes it as having a root composed of many fibres, and extending to a great distance; from which arise several weak twining stalks, that fasten themselves to neighbouring plants, and mount up to a considerable height. At each joint is one smooth three-lobed leaf, resembling that of the Hop; the two side lobes are oblique to the midrib, but the middle one is equal. The flowers are produced from the side of the stalks, three or four growing upon each peduncle: they are of an herbaceous colour and small; with a double involucre, made up of two rows of leaves, which are narrow, and armed with small bristly stinging hairs.

PROPAGATION AND CULTURE.

These plants are propagated by seeds sown early in the spring on a hot-bed, transplanted into small pots when three inches high, plunged into a bark-bed, and frequently watered. They should be afterward removed into larger pots, and placed at the back of the bark-stove, where they may have an

^b Linn. suppl.

^c Linn.

^d Hort. kew.

espalier or trellis to run up. They seldom continue more than two years.]

[DALIBARDA. See *Rubus*.

DAMASONIUM.

Lin. gen. Schreb. n. 624.

Class. 6. 5. Hexandria Hexagynia.

GENERIC CHARACTER.

CAL. *Spathe* one-leafed, oblong, five-winged: wings waved: two running down into the petiole: *mouth* five-toothed: *teeth* sharp, membranaceous at the edge.

Perianth one-leafed, three-parted, superior: *leaflets* lanceolate, blunt, surrounded by a membranaceous edge, spreading.

COR. *Petals* three, roundish, waved, spreading, longer than the *perianth*.

STAM. *Filaments* six, very short. *Anthems* linear, erect, blunt, emarginate at the base, shorter than the corolla.

PIST. *Germ* oblong, inferior. *Styles* six, linear, emarginate, erect, longer than the *stamens*. *Stigmas* villose hairs on the side of the *styles*?

PER. *Berry* oblong, ten-celled-crowned by the calyx?

SEEDS very many, oblong, small,

OBS. *The character wants to be supplied and confirmed or corrected from the living plant.*

ESSENTIAL CHARACTER.

Spathe one-leafed. *Perianth* one-leafed, three-parted. *Petals* three. *Berry* ten-celled, inferior.

SPECIES.

1. Damasonium Alismoides.

Stratiotes Alismoides. Lin. syst. 506. Reich. 2. 623. fl. zeyl. n. 223. Forsk. aegypt. 4. 101.

Ottel-ambel. Rheed. mal. 11. 95. t. 46.

DESCRIPTION, &c.

Leaves heart-shaped, nerved, floating, unarmed. Scape naked, quadrangular, one-flowered. There are only six *stamens* in the flower, with six bifid *styles*.—Native of the East Indies; Malabar, Ceylon, &c.

DAMASONIUM. See *Alisma* and *Serapias*.

DAME'S VIOLET. See *Hesperis*.]

DANDELION. See *Leontodon*.

[DANEWORT. See *Sambucus*.

DANTIA: See *Isnardia*.]

DAPHNE. (*Δαφν* of *Theophrastus* and *Dioscorides*; one of the poetical names; from the nymph *Daphne*, whose fabled metamorphosis is well known.)

Lin. gen. n. 485. Reich. 526. Schreb. 664.

Juss. 77. Thymelæa. Tourn. 366. Gertn. t. 39.

Class. 8. 1. Octandria Mongynia.

Nat. order of *Vepreculæ*.—*Thymelæa Juss.*

GENERIC CHARACTER.

CAL. none.

COR. one-petalled, funnel-form, withering, including the *stamens*.

Tube cylindric, imperforate, longer than the border. *Border* four-cleft; *divisions* ovate, acute, flat, spreading.

STAM. *Filaments* eight, short, inserted into the tube: the alternate ones lower. *Anthems* roundish, erect, two-celled.

PIST. *Germ* ovate. *Style* very short. *Stigma* headed, depressed-flat.

PER. *Berry* roundish, one-celled. (*Drupe* berried, superior. G.)

SEED single, roundish, fleshy.

OBS. *Some of the species are dioecous.*

ESSENTIAL CHARACTER.

Cal. none. Cor. four-cleft, corollaceous, withering, including the *stamens*. *Berry* one-seeded.

SPECIES.

* *Flowers lateral.*

1. Daphne Mezereum. Mezereon.

Lin. spec. 509. Reich. 2. 190. mat. med. 103.

fl. lapp. 140. suec. 338. hort. cliff. 147. Hudf.

angl. 167. With. 402. Pollich pal. n. 379.

Krock. fles. n. 600. Pallas ross. 54. Villars

* *Linn. zeyl. and Fork.*

dauph. 3. 515. Fl. dan. t. 268. Jungb. offic.

cent. 1. f. 1. Woodv. med. bot. 68. t. 23.

Blackw. t. 582. Plenck, ic. t. 302.

Thymelæa. Hall. belv. n. 1024.—Mezereum. Scop. carn. n. 462. Gertn. fruct. 188. Allion. pedem. n. 482.

Laureola fol. deciduo. Baub. hist. 1. 566.—fl. purpureo, officinis L. femina: Baub. pin. 462.

Daphnoides. Cam. epit. 937.

Chamelæa germanica. Dod. purg. 130. pempt. 364. 2.

Ger. 1216. emac. 1402. 2. Park. theat. 202. 3.

Raii hist. 1587.

β. *D. Mezereum album. White-flowered Mezereum. Ait. hort. kew. 2. 25.*

Thymelæa Lauri fol. deciduo, fl. albidu, fructu flavescente. Dubam. arb. 2. 325. n. 4.

Flowers sessile in threes on the stem; leaves lanceolate deciduous.

2. Daphne Thymelæa.

Lin. spec. 509. Reich. 2. 190. Vahl symb. 1. 28.

Ger. prov. t. 17. f. 2. Pluk. alm. t. 229. f. 2.

(*Thymelæa*).

Thymelæa Sanamunda. Allion. pedem. n. 485.

Thymelæ fol. polygalæ glabris. Baub. pin. 463. Raii hist. 1588.

Sanamunda glabra. Baub. hist. 1. 593. Baub. prodr. 160.

Flowers sessile axillary, leaves lanceolate, stems very simple.

[3. Daphne pubescens.

Lin. syst. 371. Reich. 2. 191. mant. 66.

Flowers sessile aggregate, leaves lanceolate-linear, stem pubescent.

4. Daphne villosa.

Lin. spec. 510. Reich. 2. 191.

Flowers sessile solitary, leaves lanceolate flat ciliate hairy crowded.]

5. Daphne Tartonraira. Silvery-leaved Daphne or Tartonraira.

Lin. spec. 510. Reich. 2. 191. Vahl symb. 3. 53.

Gron. orient. 125. Baub. pin. 463. 6. (Thymelæa).

Lob. ic. 371. (Tarton-Raire). Baub.

hist. 1. 593. f. 2. Raii hist. 1588. 5.

Flowers sessile aggregate lateral imbricate with scales at the base, leaves obovate, nerved, silky.

6. Daphne alpina. Alpine Daphne.

Lin. spec. 510. syst. 371. Reich. 2. 191. Gouan

illustr. 27. Hall. belv. n. 1026. (Thymelæa).

Thymelæa alpina. Allion. pedem. n. 483.

C. hirsuta. Baub. hist. 1. 569, 570. f. 1.

β. *Chamelæa fabaudica, fol. utrinque incano, fl. albo. Raii hist. 1588.*

Thymelæa incana, &c. Pluk. alm. t. 229. f. 3.

Flowers sessile aggregate, leaves lanceolate obtusish, tomentose underneath.

7. Daphne Laureola. Spurge Laurel.

Lin. spec. 510. syst. 371. Reich. 2. 192. mat.

med. 104. hort. cliff. 147. upf. 94. Hudf. angl.

167. With. 403. Lightf. scot. 205. Sowerby

engl. bot. t. 119. Jacqu. austr. 2. t. 183.

Plenck, ic. t. 303. Villars dauph. 3. 517.

Thymelæa. Hall. belv. n. 1025. Dubam. arb. 1.

— *Laureola. Scop. carn. n. 463. Allion.*

pedem. n. 484.

Laureola. Dod. pempt. 365. Ger. 1219. 1, 2. emac.

1404. 1, 2. Park. theat. 205. 1. Blackw. t. 62.

Raii hist. 1587. syn. 465.

L. sempervirens, fl. luteolo. Baub. hist. 1. 564.—

fl. viridi, quibusdam L. mas. Baub. pin. 462.

Racemes axillary, five-flowered; leaves lanceolate smooth.

[8. Daphne pontica.

Lin. spec. 511. Reich. 2. 193. Pallas ross. 1. 54.

Thymelæa pontica, citrei foliis. Tourn. itin. 2. t. 180.—3. 19. edit. oct.

Peduncles two-flowered, leaves lanceolate-ovate.

9. Daphne dioica.

Lin. syst. 371. suppl. 223. Gouan illustr. 27. t. 17.

f. 1. Baub. pin. 463. 4. (Thymelæa).

Sanamunda prima. Clus. hist. 88.

Flowers axillary twin, leaves linear-lanceolate.

** *Flowers*

** Flowers terminating.

10. *Daphne indica*. Chinese *Daphne*.
Lin. spec. 511. *Reich.* 2. 193. *Lour. cochinch.*
 137. *Burm. ind.* 88. *Osbeck. itin.* 216. *engl.*
edit. 2. p. 6.
 Head peduncled, leaves opposite oblong-ovate smooth.]
11. *Daphne Cneorum*. Trailing *Daphne*.
Lin. spec. 511. *syst.* 371. *Reich.* 2. 193. *Pollich*
pal. n. 380. *t.* 1. *f.* 4. *Gouan illustr.* 27. *Jacqu.*
austr. 5. *t.* 426. *Dubam. arb.* 2. *t.* 94. *Villars*
dauph. 3. 518.
Thymelæa. *Hall. belv. n.* 1027. *Gesn. fasc.* 5. *t.* 3.
f. 6.—minor. *Cord. hist.* 189.
T. Cneorum. *Scop. carn. n.* 464. *Allion. pedem.*
n. 487.
Thymelæa affinis facie externa. *Bauh. pin.* 463.
Raii hist. 1589.
Cneorum. *Matth. hist.* 46. *Clus. hist.* 89. *Bauh.*
hist. 1. 520.
 Flowers in bunches sessile; leaves lanceolate naked mucronate.
12. *Daphne Gnidium*. Flax-leaved *Daphne*.
Lin. spec. 511. *syst.* 372. *Reich.* 2. 194. *Plenck,*
ic. t. 304.
Thymelæa. *Clus. hist.* 1. 87. *Cam. epit.* 974.
Park. theat. 201. 1. *Raii hist.* 1588.—ramosa.
Ger. 1217. *f.* 2. *emac.* 1403.
T. fol. lini. *Bauh. pin.* 463.
T. Gnidium. *Allion. pedem. n.* 488.
 Panicle terminating; leaves linear-lanceolate acuminate.
13. *Daphne squarrosa*.
Lin. spec. 511. *Reich.* 2. 194. *Burm. afr.* 134.
t. 49. *f.* 1.
 Flowers peduncled; leaves scattered linear spreading mucronate.
- [14. *Daphne oleoides*.
Lin. syst. 372. *Reich.* 2. 194. *mant.* 66. *Schreb.*
dec. 13. *t.* 7.
 Flowers twin sessile; leaves elliptic-lanceolate smooth.
15. *Daphne foetida*.
Lin. syst. 372. *suppl.* 223.
 Smooth; flowers heaped sessile; leaves opposite petioled ovate-oblong acute.
16. *Daphne rotundifolia*.
Lin. syst. 372. *suppl.* 223.
 Hirsute; flowers heaped sessile; leaves opposite elliptic subpetioled obtuse smooth.
17. *Daphne odora*. Sweet-smelling *Daphne*.
Lin. syst. 372. *Kämpf. ic. t.* 16. *Thunb. jap.* 159.
L'Herit. stirp. nov. 2. *t.* 7. *Ait. hort. kew.* 2.
 26. *Lour. cochinch.* 237.
 Head subsessile many-flowered; leaves scattered oblong-lanceolate smooth.
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18. *Daphne pendula*.
Smith ic. ined. fasc. 2. *t.* 34.
Scopolia composita. *Lin. suppl.* 409.
 Heads lateral peduncled involucred nodding; leaves lanceolate-elliptic alternate smooth.
19. *Daphne altaica*.
Pallas ross. 1. 1. 53. *t.* 35.
 Flowers in bundles terminating sessile, leaves oblong-ovate smooth.
20. *Daphne triflora*.
Lour. cochinch. 236.
 Flowers sessile axillary heaped, calyxes three-flowered, leaves lanceolate scattered.
21. *Daphne cannabina*.
Lour. cochinch. 236.
 Umbels terminating, leaves lanceolate opposite.
22. *Daphne collina*. Neapolitan Mezereon.
Smith spicil. 16. *t.* 18. *Gesn. fasc.* 6. *t.* 3. *f.* 7.
Chamelæa alpina, *fol. inferne incano*. *Bauh. pin.*
 462. *Lob. ic.* 370.—incana & lanuginosa. *Bauh.*
hist. 1. 586.
Thymelæa saxatilis oleæ folio. *Tournef. inst.* 594.
 Flowers in bundles terminating, sessile, leaves obovate obtuse, very smooth on the upper surface, villose on the lower.

23. *Daphne Lagetto*. Lace-bark *Daphne*.
Swartz prodr. 63. *Brown. jam.* 371. *n.* 16. *t.* 31.
f. 5. *Sloan. jam.* 2. 22. *t.* 168. *f.* 1, 2, 3. &
 169. *f.* 1. *Nicols. deming.* 172. *t.* 1. *f.* 1—5.
 Spikes panicled terminating, leaves ovate acute.
24. *Daphne tinifolia*.
Swartz. prodr. 63.
Laurus americana. *Mill. dict. n.* 10.
 Racemes compound erect, flowers terminating crowded, leaves oblong.
25. *Daphne occidentalis*.
Swartz. prodr. 63.
 Peduncles axillary, flowers terminating, in umbellets, dioecous, leaves alternate lanceolate smooth.
26. *Daphne vermiculata*.
Vahl symb. 1. 28. *Barrel. ic.* 231. (Sanamunda).
 Flowers sessile lateral solitary smooth, leaves linear-lanceolate villose.
27. *Daphne sericea*.
Vahl symb. 1. 28.
Thymelæa cretica oleæ folio subtus villosa. *Tourn.*
cor. 41.
 Flowers aggregate terminating sessile, leaves lanceolate villose underneath, segments of the corolla obtuse.
28. *Daphne buxifolia*.
Vahl symb. 1. 29.
Thymelæa orientalis buxifolia subtus villosa, flore albo. *Tournef. cor.* 41.
 Flowers aggregate sessile terminating, leaves oblong very blunt villose underneath.

DESCRIPTIONS, &c.

The species of this genus are shrubs of no great height. The flowers axillary in some, at the ends of the branches in others; in some solitary, in others glomerate. The genus is very nearly allied to *Passerina*, and they are scarcely distinguishable from the flower; only the style is filiform and as long as the tube of the corolla in the *Passerina*, whereas in the *Daphne* there is little or no style.

The flowers are not always three together, but sometimes two, four or five*. The terminating buds produce leaves, and the lateral buds flowers*.

1. The Mezereon is a shrub, growing (in gardens) to the height of five or six feet, with a strong woody stalk, putting out many woody branches on every side, so as to form a regular head. The flowers come out very early in the spring, before the leaves, in clusters all round the shoots of the former year. The leaves are smooth, about two inches long, and three quarters of an inch broad in the middle, placed without order.

[This shrub is seldom more than three or four feet high even in gardens, but in its wild state it is from one to two feet in height: the branches then are not numerous; they are very flexible; the leaves are entire and of a pale green.

The fruit is a superior berried drupe, first green, then red, of an ovate-globular form; with a thin succulent pulp, and a crustaceous, thin, brittle, black shining shell. It is however commonly called a berry*.

Native of Lapland, Sweden, Denmark, Germany, Switzerland, France, Carniola, Savoy, Piedmont, Great Britain. Mr. Miller is the first who mentions that it is a native of our island, namely near Andover in Hampshire. Since that it has been found by Mr. Woodward at Laxfield in Suffolk; by Mr. White in Selborne-hanger, Hants; and it has been frequently observed in the beech woods of Buckinghamshire. As it has escaped all our old herbarists, and even the indefatigable Ray and his immediate successors; and birds are remarkably fond of the berries; I should suspect that they may have disseminated this beautiful shrub: unless we may suppose that it remained unnoticed on account of its early flowering, before herbarists sallied forth on their vernal excursions.

Gerarde says that he had plenty thereof for his garden from Elbing in Poland. He calls it Germaine Olive Spurge or Spurge Olive, Spurge Flax,

* Reich. and Juss.

* Linn. succ.

* Gartner.

and Dwarf Bay, and says that the Dutch call it Mezereon. Parkinson calls it Dwarf Bay or flowering Spurge. In German it is *Kellerbals*, *Kellerbere*, *Kellerkraut*, &c. In Dutch, *Peperboompje*. In Danish, *Kiellerbals*. In Swedish, *Kiellerbals*. In French, *Laureole gentille* or *femelle*, *Bois gentil*, *Bois joli*. In Italian, *Laureola femina*, *Dafnoide*, *Camelea*, *Calmoiea*, *Biondella*. In Spanish, *Laureola hembra*. In Portuguese, *Loireolea femea*, or *Mezereon major*. In Russian, *Woltschje luko*.

The branches make a good yellow dye.

The whole of this vegetable is extremely acrid, especially when fresh, and if retained in the mouth excites great heat and inflammation; particularly of the throat and fauces. The berries when swallowed prove a powerful poison not only to man but to many quadrupeds. Both the bark and the berries of Mezereon, in different forms, have been long used externally in cases of obstinate ulcers and ill-conditioned sores. In France the bark is used as an application to the skin, which under certain management, produces a serous discharge without blistering: and is thus rendered useful in chronic cases of a local nature, answering the purpose of what is called a perpetual blister, while it occasions less pain and inconvenience. In our own country the Mezereon has been principally employed in syphilitic cases, and in this way Dr. Donald Monro was the first who gave testimony of its efficacy in the successful use of the Lisbon diet-drink. Afterwards several cases were published by Dr. Ruffel, then physician to St. Thomas's hospital, fully establishing the utility of the bark of Mezereon in venereal nodes. In the above cases the decoction of the root was made use of; but in some cases it has been found necessary to join with it a solution of sublimate. Dr. Cullen says that Dr. Home has not only found the decoction of Mezereon to cure schirrous tumours which remain after the lues venerea, and after the use of mercury, but that it has also healed schirrous tumours from other causes. The considerable and long-continued heat and irritation that is produced in the throat when Mezereon is chewed, induced Dr. Withering to give it in a case of difficulty of swallowing, seemingly occasioned by a paralytic affection: the patient was directed to chew a slice of the root as often as she could bear it, and in about a month she recovered her power of swallowing: she had suffered the above complaint upwards of three years, and was greatly reduced, being totally unable to swallow solids, and liquids but very imperfectly^d.

There are two principal varieties of the Mezereon; one with a white flower succeeded by yellow berries; the other with peach-coloured flowers and red fruit: the latter has sometimes flowers of a much deeper red.

There is also a variety with variegated leaves. The flowers appear in february or march, in mild seasons in january. The berries ripen in june, [if they are not eaten by birds.—Monf. Villars mentions another variety, with the leaves a little villose, or having small hairs at their base, and the flowers four together. He remarks, that the parts of fructification are so perfectly formed, the year before the flowers unfold themselves, that the character may easily be determined by the naked eye.]

2. This rises to the height of three or four feet, with a single stalk, covered with a light-coloured bark. The flowers come out in clusters on the sides of the stalk, and being of an herbaceous colour make but little appearance: they appear early in the spring, and are succeeded by small berries which are yellowish when ripe.

[According to Vahl, it is a low little shrub, branching only at bottom: the branches are erect, quite simple, smooth and even. Leaves very smooth, erect, glaucous. Flowers solitary, sometimes two or even three together, shorter than the leaf, dioecous, four-stamened. D. dioica (n. 9.) has a very

^d Woodville.

branching stem, the branches warted, the leaves more crowded together and shorter, broader towards the top, and not narrowing to both ends.

D. Thymelæa is native of Spain, Italy, and the South of France. Vahl found it in great abundance on the confines of New Castille towards Navarre.

3. Stems simple. Leaves alternate, remote, almost naked; annual, submucronate. Flowers axillary, narrow, five or fewer, with a filiform pubescent tube, shorter than the leaves. It seems to be different from the preceding species, and was found in Austria by Jacquin^e.

4. This is a shrub with alternate branches. Leaves like those of Knot-grass, scarcely petioled, with white remote hairs on both sides, fewer on the upper surface, and more towards the edges. In the axils are very many rudiments of branchlets, whence it is as it were verticilled. Flowers narrow, small, shorter than the leaves. Observed in Spain and Portugal by Alstroemer^f.

5. This is a low shrubby plant, which sends out several weak stalks from the root, about a foot long, and spreading about irregularly; these seldom become woody in England, but are tough and stringy, covered with a light bark: the leaves are small, very soft, white and shining like satin, and sit pretty close to the stalks: between these white flowers come out in thick clusters. [They are commonly two or three together, very seldom solitary, bell-shaped, silky on the outside, but yellowish within, imbricated at the base with four or more ovate keeled scales^g.

Native of the South of France. Cultivated by Mr. Miller in 1739^h.

Vahl has another species (symb. 3. 53.) which he names *Daphne nitida*, and which he found on the calcareous mountains of Tunis. It has the appearance of the Tartonraira, but the leaves are only one-sixth of the size, and nerveless; there are no scales at the base of the calyx; and the branches are rough, but not squarrose with the permanent floral scales.]

6. This rises about three feet high. The flowers come out in clusters from the sides of the branches early in the spring, and are succeeded by small roundish berries, which turn red when ripe.

[The root fixes itself deeply in the crevices of the rocks. The little stems are shrubby and upright, scarcely a palm in height, as it were brachiate, leafy and flowering at the top. Leaves lanceolate or obovate, usually emarginate, hoary with hairs when viewed with a glass; as are also the calyxes and fruits. The younger leaves appear hirsute to the naked eye, but afterwards appear bald unless to the magnifierⁱ.

Native of the South of France, the mountains near Geneva, Austria, and Italy. Cultivated in 1759, by Mr. Miller^k.]

7. This is a low evergreen shrub, rising with several stalks to the height of two or three feet, dividing at top into several branches. The leaves come out irregularly on every side, sit pretty close to the branches, are thick, smooth and of a lucid green. Among these, towards the upper part of the stalks, come out the flowers in small clusters; they are of a yellowish green, and appear soon after christmas, if the season be not very severe. They are succeeded by oval berries, which are green till june, when they ripen and turn black, soon after which they fall off.

[The whole plant is flexible. The leaves are crowded at the ends of the branches, they are green all the winter, and are renewed in spring, after flowering time^l. The racemes are nodding, with concave alternate bractes, not having any flowers in their axils. Flowers five terminating, heaped into an umbellet. The flowers are of a dull colour, their scent is unpleasant, and they appear at a gloomy season^m.

^e Linn. mant.

^f Linn. spec.

^g Vahl.

^h Hort. kew. from Mill. dict.

ⁱ Gouan.

^k Hort. kew.

^l Lightf. and Villars.

^m Linn. syst.

Native of Britain, France, Switzerland, Austria, and Carniola. Gerarde did not know that it grows wild in England; although it is common enough with us in woods and hedges.

Notwithstanding Linneus's censure, the Spurge Laurel is a shrub of some value, on account of the lucid green of the leaves, which continuing all the year, render it ornamental in winter; but particularly because it flourishes under trees, and is therefore very proper to fill up spaces in plantations.

[Very happy effects are said to have been sometimes experienced from this plant in rheumatic fevers: it operates as a brisk and rather severe purgative: it is an efficacious medicine in worm cases; but on account of its acrimonious nature, it should be used by skilful practitioners. The whole plant has the same qualities, but the bark of the root is the strongest. Dr. Alston fixes the outside dose at ten grains^a.

Some other species of this genus are possessed of nearly similar powers with the Mezereon and the Spurge Laurel, and are used in similar cases, but, like the former, require caution in their use, and should not be trusted to inexperienced hands.

8. Stem about two feet high, branched sometimes from the very bottom, about three lines in thickness, very pliable, covered with a gray bark. Leaves towards the top without order, of the figure and consistence of those of the Lemon, the largest four inches long and two wide, pointed at each end, smooth, bright green and shining, having a thick midrib underneath. At the end of april young shoots terminated by new leaves push from the extremities of the stems and branches, among which spring the flowers commonly in pairs on a peduncle nine or ten lines in length. The corolla is of a greenish yellow inclining to lemon colour; it has a sweetish smell which is soon lost^a.

Native of Pontus, first observed there by Tournefort: also in Siberia, by Guldenstadt, flowering in autumn^b.

9. This is a shrub a foot in height, stiff and branched, with a corky bark. Branches alternate, erect, stiff, roughened by the scars of fallen leaves. Leaves crowded so as almost to be imbricate, very smooth, resembling those of Myrtle, four lines long, and hardly a line broad, not ciliate. Flowers sessile, always two together, one flowering later than the other, dioecious: corolla yellowish white or pale-sulphur colour, with a bellying tube.

Native of the Pyrenees, where it was first observed by Dr. Peck, a physician of Narbonne; and in 1768 by Gouan^c.

10. This is a small shrub, a span's length, according to Osbeck, or three feet high, with ascending branches, according to Loureiro. Leaves commonly acute, quite entire, petioled. Peduncle very short, with from six to eight sessile flowers at top^d. Osbeck says, that the eight filiform stamens are as long as the corolla or pistil; whereas according to Loureiro, they are usually ten in number, concealed within the tube, placed in two rows, in the upper six, in the lower four.

Native of China, about Canton, but probably from Nankin, since it is commonly called the Nankin shrub^e.

11. This is a very humble shrub, seldom more than one foot high. Stems branched. Leaves narrow-lanceolate, placed without order. The branches are terminated by small clusters of purple flowers, which stand erect. The tube of the corolla is longer and narrower than in the Mezereon. The flowers emit a pleasant odour, and appear early in the spring.

[The leaves are sometimes acute, sometimes obtuse and emarginate^f. It varies with white flowers^g.

Native of France, Germany, Switzerland, Austria, monte Baldo, the Pyrenees, and Hungary. Cultivated in 1739^h.]

12. This rises with a shrubby stalk about two feet high, dividing into small branches, terminated by panicles of flowers, which are much smaller than those of the Mezereon, having swelling tubes contracted at the mouth; they appear in june.

[The stems spread on the ground; the leaves are annual and smooth; the flowers heaped, surrounded with leaves, sweet-smelling, red aboveⁱ.

Native of the South of France, Spain and Italy, flowering twice in the year.—Cultivated in 1597, by Gerarde^j: by whom it is called Spurge Flax or Mountain Widow Wayle: by Parkinson Spurge Olive.]

13. This rises to the height of five or six feet, dividing at top into several erect branches, covered with a white bark, and terminated by woolly heads, out of which the flowers come in small clusters: they are white, have oblong tubes, and the segments of the border are obtuse and spreading.

Native of the Cape of Good Hope.

[14. Stem shrubbyish, compound.—Native of the Levant^k.

15. Native of the Society isles^l. It is not certain whether it be distinct from *D. indica*^m.

16. Branches tomentose, hoary.—Native of Tonga Tabuⁿ, or Namoka^o, in the South Seas.

17. Stem becoming shrubby, dichotomous, smooth, naked, erect. Branches like the stem, from divaricate erect. Leaves at the top of the last branchlets, approximating, sessile, acute, quite entire, spreading, bent back at the tip; deep green on the upper surface, with a groove along the middle; paler underneath; unequal, thick, evergreen, an inch in length. Flowers about eleven. Bractes between the leaves and the umbel, lanceolate, about ten, entire, concave, green, smooth, only half the length of the calyx. Corolla smooth; tube purple, a line in length, divisions of the border subcordate-ovate, obtuse, on the outside purple and somewhat wrinkled, on the inside scarlet, spreading, alternately incumbent. Filaments inserted below the mouth: anthers oblong, four included, and four standing out. Germ smooth: style none: stigma simple, sessile, globular, retuse with a transverse groove, whitish. Seed ovate, smooth.—It differs from the *Passerinas* in having no style; from *D. indica* in having a sessile head, and alternate leaves.

Native of Japan, flowering there in february^p; also of China, where it is cultivated on account of the grateful odour of the flowers.—Introduced 1771, by Benjamin Torin, Esq. and flowers here from december to march^q.

18. A tree or shrub with alternate round branches, leafy at the end; covered with a smooth brown outer bark, and a very filamentose, silky, white inner bark, as in most of the other species. Leaves on short petioles, acute, quite entire, veined, paler underneath, deciduous; the primordial ones minute, like stipules, silky on the back, and abortive. There are no proper stipules. Flowers in solitary heads, from the axils of the leaves of the former year. A pair of small, erect, linear, obtuse bractes, hairy on the outside, at the base of the peduncles; which are an inch long, round, smooth, growing gradually thicker to the end. Involucre two-leaved, many-flowered; leaflets obovate, obtuse, concave, quite entire, a little longer than the flowers, pubescent on the outside, obscurely nerved. Calyx subcylindric, white, very hirsute on the outside, divided into four acutish, small segments; the two inner smaller and smooth. Germ smooth at the sides, but terminated by numerous bristles, the length of the style. Stigma rather large, smooth.—On account of the involucre, it should seem as if it might be placed in the genus *Dais*; but since it agrees with the *Daphnes* in the structure of the flower, and number of the parts; and since the involucre itself, resembles more the bractes in some species of *Daphne*, than the invo-

^a Withering. ^b Tournefort. ^c Pallas. ^d Gouan illustr.
^e Linn. spec. Osh. Lour. ^f Loureiro. ^g Gouan.
^h Clusius. ⁱ Hort. kew. from Mill. dict.

^j Linn. syst. ^k Hort. kew. ^l Linn. mant. ^m Forster.
ⁿ Linn. suppl. ^o Ibid. ^p Forster. ^q Thunberg.
^r Hort. kew.

lucre of Dais, it seems better to refer it to this genus^b.

Thunberg gathered it in the island of Java.

19. This shrub seems to have the habit of *Mezereum*. The stems are straight, slender, covered with an even testaceous bark; the lower branches are short, flowering, hairy next the flowers; the upper ones which continue the growth of the shrub, are smooth. Leaves alternate, quite entire, drawn to a point at the base, sessile; on the flowering twigs oblong-ovate, smaller, growing up to the flowers; on the barren branches more oblong, very like the leaves of *Mezereum*, and emulating their consistence. Flowers mostly five together, collected into a head, without any bractes or stipules. Corolla white, with a longish tube, swelling at the base, pubescent with many hairs, and a spreading border, with lanceolate smooth segments: anthers in a double row in the tube on very short filaments: germ subglobular, with an obtuse stigma.

This elegant shrub was discovered by Patrin in the Altaic alps.

Pallas has another species allied to this and the *Cneorum*, which he calls *Daphne caucasica*. It was observed by Guldenstadt by the river Csani near Achalgory, flowering with the Cherry and Pear at the end of april, and no where else on mount Caucasus. It is a shrub two or three feet high and more, with wand-like branches, diffused, and covered with a brown bark. Leaves crowded, sessile, oblong-lanceolate, somewhat waved, glaucous, quite entire, blunt at the end, and terminated by a little thorn. The flowers are in terminating, sessile, naked umbels, about twenty together; they are white, succulent, the size of Lilac flowers, with the smell of the Hyacinth: tube long, green: stamens inclosed within the tube, in two rows, four at the throat, and four in the middle of the tube, on very short filaments¹.

20. Stem three feet high, simple, with ascending branches. Leaves quite entire, smooth, on short petioles. Flowers yellowish. Common calyx three-leaved, three-flowered. Corolla tubular, four or five-cleft.

Native of China, in the suburbs of Canton.

21. This is a tree, ten feet high, with ascending branches, and a very tough bark like that of Hemp. Leaves ovate-lanceolate, quite entire, smooth. Flowers yellow, in subterminating umbels. Corolla falver-shaped, with a long tube, and a small border, with ovate segments. Filaments in two rows within the tube, with oblong anthers. Berry ovate, red, small.—Native of the woods of Cochinchina.

An excellent writing paper is made from the bark, prepared like Hemp. Shapeless, heavy, brown, resinous, woody fragments, resembling the wood of Aloe, and having somewhat of its smell in the fire, are frequently found within the trunk of this tree near the root. The bark and root may be used medicinally in the *Ascites*, &c. without any of that danger to which the other species are liable^k.

22. Stems three feet high, much branched, the branches often forked: bark tough, wrinkled, void of down or hair, except on the younger branches. Leaves evergreen, alternate, on short foot-stalks, entire, a little revolute on the edge, having a silky down underneath. Bractes obovate, obtuse, externally downy. Calyx red, with a silky down on the outside; its divisions spreading, a little obtuse. Germ clothed with upright bristles, as in *D. pendula*, and there are nectariferous glands at the base.

Native of low hills in the South of Italy: it covers the hills and fields on the banks of the *Vulturnus*, as furze does our commons in England; and since it thrives with us like the Myrtle, it is a valuable addition to our shrubs. Dr. Smith gathered it in march 1787 near Caserta, in company with Mr. Græffer^l.

23. This is a tree, the wood of which is white. Leaves about four inches long, and two and a half

broad near the base where broadest, having one middle and several transverse ribs, of a yellowish green colour, shining, thick and smooth. The outer bark is smooth, light brown or gray and striated; the inner is solid and white, of a very fine texture, tough and divisible into several coats or layers, which may be drawn out into thin webs resembling lace, and have been actually worn as such. King Charles the Second had a cravat made of it, which was presented to him by Sir Thomas Lynch then governor of Jamaica. It is there principally used for ropes, but would undoubtedly make fine paper, if properly prepared^m.

Native of Jamaica, where it is called Lagetto or Lace-bark tree; and of Hispaniola, where it is known by the name of Bois Dentelle. Its place is between the 10th and 11th species.]

24. This rises with a woody stalk to the height of twenty feet, dividing into many branches, which are covered with a gray rough bark; at the extremity of the branches are produced the peduncles, which are unequal in length, and divide into several smaller, each sustaining a cluster of small white flowers, which are collected into a head or small umbel, having one general involucre; they are male and hermaphrodite on different trees. The latter are succeeded by oval berries, not quite so large as those of the common Bay. The leaves of this tree are about two inches long, and one inch broad, rounded at the top and entire, on very short foot-stalks. It was discovered at La Vera Cruz by Dr. Houstoun, [and is also a native of Jamaica. It was cultivated by Mr. Miller before 1733.

25. Native of Jamaicaⁿ.

The place of this and the foregoing is between the 11th and 12th species.

26. This is an humble, stiff and very branching shrub. Branches purple, warted, villose at top. Leaves sessile, crowded, thick, obtuse. Flowers axillary, opposite, shorter than the leaf. Scales in pairs, opposite, minute, at the base of the calyx. Segments of the corolla ovate. Gathered by Vahl in the kingdom of Arragon.

Its proper place is between the third and fourth species.

27. This is a very branching shrub. Branches round, brown, villose at top. Leaves towards the ends of the branchlets, crowded, sessile, lanceolate-elliptic, veinless, quite entire, acute, smooth above, villose underneath. Flowers purple, five. Tube of the corolla villose-silky, enlarged at the base; the segments of the border oblong, obtuse, smooth within, shorter by half than the tube. Fruit sub-ovate. It differs from *D. oleoides* in having the leaves villose underneath, in the number of flowers, and in the segments of the border being oblong. Native of Candia and Naples.

The proper place of this and the next is between the 14th and 15th species.

28. This is a shrub with round, villose, naked branches. Leaves towards the ends of the branchlets, approximating, sessile, a little narrower at the base, rounded at the end, the younger ones villose on both sides, the rest only underneath, veinless. Flowers six. Tube of the corolla villose-silky on the outside, gibbose at the base; segments oblong, obtuse. It differs from the foregoing in the form of the leaves, and the whiteness of the corolla.—Native of the Levant^o.]

PROPAGATION AND CULTURE.

1. This is propagated by seeds, which should be sown on a border exposed to the east, soon after the berries are ripe; for if they are not sown till the spring following they often miscarry, and always remain a year in the ground before the plants appear; whereas those which are sown in august, will grow the following spring, so that a year is saved, and these never fail. When the plants come up, they will require no other care but to keep them clean

^b Smith.

ⁱ Pallas.

^k Loureiro.

^l Smith.

^m Sloane and Browne.

ⁿ Swartz.

^o Vahl.

from weeds, and if the plants are not too close together, they may continue in the seed-bed, to have the growth of two summers, especially if they do not make great progress the first year; then at Michaelmas, when the leaves are shedding, they should be carefully taken up so as not to break or tear their roots, and planted into a nursery at about sixteen inches row from row, and eight or nine inches asunder in the rows; in this nursery they may remain two years, by which time they will be fit to remove to the places where they are designed to remain for good: the best season to transplant these trees is in autumn, for as these plants begin to vegetate very early in the spring, it is not proper to transplant them at that season. These plants grow best in a light sandy earth which is dry, for in cold wet land they become mossy, and make little progress; so that upon such soils they never grow to any size, and produce few flowers.

Although the berries of this tree are so very acrid, as to burn the mouth and throat of those who may incautiously taste them, yet the birds greedily devour them, as soon as they begin to ripen: so that unless the shrubs are covered with nets to preserve the berries, they will all be destroyed before they are fit to gather.

The Mezereon is a very ornamental shrub in gardens, very early in the spring, before others flower: and where there are plenty of them growing together, they perfume the air to a considerable distance.

7. Spurge-Laurel may also be propagated by seeds, layers or cuttings. The plants may be easily obtained from the woods.

The second, fifth, and twelfth sorts are hardy, and will live through the winters in England in the open air, provided they are in a dry soil and a warm situation. The sixth and eleventh sorts are as hardy as the common Mezereon, so are not in danger of being hurt by frost in England; but they are all very difficult to keep in gardens, because they will not bear to be transplanted. I have several times raised the plants from seeds, which have succeeded well in the places where they were sown, but whenever they were removed, they certainly died, though performed at different seasons, and with the greatest care, and the same has happened to every other person who has raised any of these plants; and some of my correspondents have assured me, they have frequently attempted to remove these plants from their natural places of growth, into their gardens, and have chosen plants of all sizes, from the youngest seedlings to the oldest plants, yet have never succeeded in it; though they have used their utmost care, and have performed it at different seasons. Therefore those who are desirous to have these plants in their gardens, must procure their seeds from the countries where they naturally grow; and when they arrive, they should be immediately sown where they are designed to remain, which for the second, fifth, and twelfth sorts, should be on a very warm dry border, where, if there is a foundation of lime, rubbish, or chalk, under the upper surface of the ground, the plants will thrive better and continue much longer, than in better ground; and all the culture they require, is to keep the place clean from weeds, for the less the ground is stirred near the roots, the better the plants will thrive; for they naturally grow on poor shallow land, and out of crevices in rocks; so the nearer the soil approaches to this, the more likely the plants will be to succeed.

The sixth and eleventh sorts may have a cooler situation; if these are sown where they may have only the morning sun, they will thrive better than in a warmer situation, and the ground near the roots of these should not be disturbed; therefore in the choice of the situation, there should be regard had to this, not to sow them near other plants, which may require transplanting, or to have the ground dug and loosened. The seeds of these plants coming from distant countries, rarely arrive here time enough to sow in autumn, so that when they

are sown in the spring, the plants do not appear till the succeeding spring; and I have sometimes had the seeds remain till the second spring in the ground, before the plants have appeared; but as this may be too long for many people to leave the ground undisturbed, they had better put the seeds into small pots of earth, and bury them in the ground the first summer, and in autumn take them up, and sow them where they are to stand; by this method, the seeds will be forwarded to vegetate the following spring.

The sixth sort is a beautiful sweet shrub, and deserves a place in gardens, as much as any of those we cultivate for ornament.

The thirteenth sort grows naturally at the Cape of Good Hope, and requires a good green-house to preserve it. This plant is very difficult to keep or propagate in gardens.

The 14th, 15th, 16th, 17th also require the protection of a green-house.

18, 23, 24, 25. are stove plants, and must be managed in the same manner with Coffee.

[DAPHNE AMERICANA. See *Strumpfia*.

DAPHNOIDES. See *Daphne*.

DAREA. See *Trichomanes*.

DARNEL-GRASS. See *Lolium*.

DASYSTEPHANA. See *Gentiana*.

DATE-PLUM. See *Diospyros*.

DATE-TREE. See *Phoenix*.]

DATISCA.

Lin. gen. n. 1132. *Reich.* 1237. *Schreb.* 1543.

Gärtn. t. 30. *Juss.* 445. *Cannabina. Tourn.* cor. 52.

Class. 22. 10. Dioecia Dodecandria.

Miscellaneæ α. Lin. ord. nat.

GENERIC CHARACTER.

* Male.

CAL. *Perianth* five-leaved: leaflets linear, acute, equal.

COR. none.

STAM. *Filaments* scarce any. *Anthers* about fifteen,

oblong, many times longer than the calyx, obtuse.

* Female.

CAL. *Perianth* two-toothed, the third tooth wanting, erect, very small, superior, permanent.

COR. none.

PIST. *Germ* oblong, inferior, longer than the calyx. *Styles* three, two-parted, short. *Stigmas* simple, oblong, shaggy, length of the germ.

PER. *Capsule* oblong, triangular, three-valved, three-horned, one-celled.

SEEDS numerous, small, adhering longitudinally in three (from three to five, G.) directions to the capsule.

ESSENTIAL CHARACTER.

MALE. Cal. five-leaved. Cor. none. *Anthers* sessile, long, fifteen.

FEM. Cal. two-toothed. Cor. none. *Styles* three.

Caps. triangular, three-horned, one-celled, pervious, many-seeded, inferior.

SPECIES.

1. *Datisca cannabina.* Smooth-stalked Bastard Hemp. *Lin. spec.* 1469. *Reich.* 4. 271. *hort. cliff.* 457. (Cannabis.) *Gärtn. fruct.* 147.

Cannabis lutea fertilis. *Alp. exot.* 300. *t.* 298.

Mor. hist. 3. 433. *f.* 11. *t.* 25. *f.* 3, 4.

C. lutea cretica—& sterilis. *Alp. exot.* 296. *t.* 295

& 301. *t.* 300.

Luteola herbasterilis—& fol. cannabinæ. *Bauh. pin.* 100.

Stem even.

2. *Datisca hirta.* Rough-stalked Bastard Hemp.

Lin. spec. 1469. *Reich.* 4. 271.

Stem hirsute.

DESCRIPTIONS, &c.

[These are tall, upright herbs, with alternate un-

equally-pinnate leaves. The flowers are in spiked racemes, axillary, with one bracte. The capsule is like that of *Reseda*, but inferior; and the flower is apetalous. They have the air of Hemp, but the fruit is inferior, and contains many seeds.]

* *Jussieu.*

1. This

1. This has a perennial root, from which arise several herbaceous stalks, about four feet high, with pinnate leaves placed alternately, each composed of three pairs of leaflets, terminated by an odd one; these are two inches long, and half an inch broad, ending in acute points, deeply serrate, and of a light green. The flowers come out in long loose spikes from the upper part of the stalks at the axils, but having no petals make a poor appearance: the anthers of the male flowers being pretty long, and of a bright yellow colour are most visible at any distance.

[Capsule inferior, ovate-oblong, crowned with the two subulate teeth of the calyx and the three bifid styles, membranaceous, thin, with three or five rounded angles, having no valves, but opening at top with a large round hole^b.

Native of Candia or Crete. Cultivated in 1739, by Mr. Miller^c.

It flowers in June or July, and the seeds ripen in September.

2. Larger. The stem rough on every side with hairs that stand out. Leaflets larger, more alternate, more decurrent and confluent at the base^d.

Found in Pennsylvania, by Kalm.]

PROPAGATION AND CULTURE.

These plants may be propagated by parting the roots, which should be performed in autumn when the stalks decay, but they must not be parted too small; they may be planted in any open beds, where they are not under the drip of trees, and will require no other culture but to keep them clean from weeds.

They may also be propagated by seeds, but these should be taken from such plants as grow in the neighbourhood of male plants, otherwise they will not succeed; and if the seeds are not sown in autumn, they seldom grow the first year. The seedling plants when they rise, will require no other care but to keep them clean from weeds till autumn, when they may be transplanted where they are to grow.

The second sort is equally hardy with the first, but should have a more shady situation, and a moister soil.

DATURA.

Engl. *Thorn-apple*.

Lin. gen. n. 246. Reich. 263. Schreb. 332.

Juss. 125. Stramonium. Tourn. 43. 44.

Pont. 3. 1.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Luridæ*.—Solaneæ. Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, oblong, tubular, bellied, five-cornered, five-toothed, horizontally deciduous near the base, the remaining circular part permanent.

COR. one-petalled, funnel-form. Tube cylindric, almost longer than the calyx. Border erect-expanding, five-cornered, five-plaited, almost entire, with five acuminate teeth.

STAM. *Filaments* five, subulate, length of the calyx. *Anthers* oblong, compressed, obtuse.

PIST. *Germ* ovate. *Style* filiform, straight. *Stigma* thickish, obtuse, two-plated.

PER. *Capsule* somewhat ovate, two-celled, four-valved, seated on the base of the calyx. *Receptacles* convex, large, dotted, affixed to the dissepiment.

SEEDS numerous kidney-form.

OBS. *The smoothness as well as the prickly roughness of the capsule in this genus varies.*

ESSENTIAL CHARACTER.

Cor. funnel-form, plaited. Cal. tubular, angular, deciduous. Caps. four-valved.

SPECIES.

1. *Datura ferox*. *Rough Thorn-apple*.

Lin. spec. 255. Reich. 1. 497. amæn. 3. 403.

Zanon. hist. 1. 76.

Stramonium ferox. Bocc. sic. 50. Herm. lugdb. 583.

Mor. f. 15. t. 2. f. 4. Raii hist. 748. n. 5.

^b Gærtner.

^c Hort. kew.

^d Linn. spec.

S. longioribus aculeis. Bar. rar. 109. t. 1112.

Pericarps thorny erect ovate, the upper thorns very large and convergent.

2. *Datura Stramonium*. *Common Thorn-apple*.

Lin. spec. 255. Reich. 1. 497. hort. cliff. 55.

upf. 43. fl. suec. n. 198. Hudf. angl. 92. With.

230. Curtis lond. n. 61. Gron. virg. 23.

Pollich pal. n. 224. Krock. files. n. 339. Fl.

dan. t. 436. Blackw. t. 313. Sabb. hort. 1. t. 92.

Woodv. med. bot. 338. t. 124. Stoerck stram.

Plenck, ic. t. 96.

Stramonium. Hall. belv. n. 586.—foetidum. Scop.

carn. n. 252.—spinosum. Ger. emac. 348. f. 2.

Solanum foetidum pomo spinoso oblongo. Baub. pin. 168.

S. maniacum. Col. phyt. 47.

S. pomo spinoso oblongo, &c. Raii syn. 266.

S. majus album. Park. parad. 360. Raii hist. 748.

Pericarps thorny erect ovate, leaves ovate smooth.

3. *Datura Tatula*. *Blue Thorn-apple*.

Lin. spec. 256. Reich. 1. 498.

Stramonium majus purpureum. Park. parad. 360.

Raii hist. 748.

Pericarps thorny erect ovate, leaves cordate smooth toothed.

4. *Datura fastuosa*. *Purple Thorn-apple*.

Lin. spec. 256. syst. 220. Reich. 1. 498. Rumph.

amb. 5. t. 243. f. 2. Sabb. hort. 1. t. 93.

S. foet., pomo spinoso rotundo, semine pallido. Baub. pin. 168. Raii hist. 748. 2.

Pericarps tubercled nodding globular, leaves ovate angular.

5. *Datura Metel*. *Hairy Thorn-apple*.

Lin. spec. 256. syst. 220. Reich. 1. 498. hort.

cliff. 55. upf. 44. fl. zeyl. n. 86. mat. med. 64.

Rumph. amb. 5. 242. t. 87. Rheed. mal. 2. 47.

t. 28. Lour. cochinch. 110.

S. pomo spin. rot., longo fl. Baub. pin. 168. Raii hist. 747.

Pericarps thorny nodding globular, leaves cordate almost entire pubescent.

6. *Datura arborea*. *Tree Thorn-apple*.

Lin. spec. 256. Reich. 1. 498.

Stramonoides. Feuill. peruv. 2. 761. t. 46.

Pericarps smooth unarmed nodding, stem arboreous.

[7. *Datura laevis*. *Smooth-capsuled Thorn-apple*.

Lin. syst. 220. suppl. 146. Weig. in act. soc.

phys. t. 1.

D. inermis. Jacq. hort. 3. 44. t. 82.

Pericarps smooth unarmed erect, leaves smooth, stem fistular herbaceous.]

8. *Datura innoxia*.

Mill. dict. n. 5.

Stramonium fol. hyoscyami, fl. toto candido, fr. propendentē rotundo, spinis innoxiiis ornato.

Boerb. lugdb. 1. 262.

Pericarps ovate nodding set with harmless spines, leaves cordate pubescent.

DESCRIPTIONS, &c.

[The species of this genus have a strong narcotic smell; they are all herbs and annual, except the sixth. The flowers and branches solitary.]

1. This sort seldom rises more than a foot and half high, spreading out into many branches. Leaves somewhat like those of the common or second sort, but smaller, and standing upon longer foot-stalks; the flowers are also smaller; the fruit is round, and armed with very strong sharp thorns; the seeds are black when ripe.

[This is less smooth than the common sort (n. 2.) and the four uppermost spines of the capsule are very large and erect. It is annual and a native of China^e.

It flowers from July to September, and was cultivated in 1731, by Mr. Miller^f.

2. Stem from one to six feet in height, according to the soil, but seldom more than two feet, round, smooth; dividing into many strong, irregular branches, which are hollow, covered with a fine down. Leaves from the forking of the stem and

^e Linn. spec.

^f Hort. kew.

branches, single, scarcely six inches long, petioled, pointed, deep green on the upper surface, paler beneath and on the edges, with strong ribs or nerves, unequally sinuated and toothed about the edge, extending farther down the petiole on one side than on the other. Petioles round, downy, shorter than the leaves, above faintly channelled. *Flowers* single from the axils, on short peduncles, upright, (first from the forks of the branches, and afterwards near the extremities). Calyx pale green: corolla white; tube greenish, shorter than the calyx: lower part of the filaments attached to the tube of the corolla; anthers upright, sessile, of a brownish yellow colour. Nectary a circular notched gland at the base of the germ, which is superior, somewhat conical and hispid; style the length of the stamens, growing a little thicker towards the top. Seeds blackish².

Gerarde (1597) informs us, that the Thorne apple was brought in seed from Constantinople by Lord Edward Zouch. Mr. Miller says, it was probably first introduced from Italy or Spain, but it is now become so common about London and other great towns, as to appear like a native plant, there being few gardens or dunghills without it in summer.

[That it is a native of America however we have the most undoubted proofs; for in the earth brought with plants from various parts of that extensive country, we are sure to have the Thorn-apple come up. Kalm says, that it grows about all the villages, and that this and the *Phytolacca* are the worst weeds there³. Our old writers call it Thorny-apples of Peru.

At night the leaves, particularly the upper ones, rise up and inclose the flowers⁴: which appear from July to September.

Gerarde says he first dispersed the seeds through this land, and that he made great use of it in chirurgery, as well in burnings and scaldings, as also in virulent and malignant ulcers, apostemes, and such like.

An ointment prepared from the leaves gives ease in external inflammations and hæmorrhoids. The Edinburgh college direct an extract from them; which has been given with great advantage in convulsions and epilepsies; the dose from two to sixteen grains a day. These and the seeds given internally bring on delirium, tremors, swelling, itching, eruption, and inflammation on the skin⁵.

3. This resembles the common sort, but is twice the size. Stem purplish with white dots, divided at an acute angle, smooth and even. Corollas pale blue. Leaves more finely toothed, and, if they be flattened, cordate¹.

Cultivated 1686, by Mr. Ray^m, in his garden at Cambridge.]

4. This rises with a fine polished purple stalk four feet high, dividing into several branches. Leaves large, smooth, sinuated, on pretty long foot-stalks. The flowers are produced at the divisions of the branches; they have large swelling tubes, which spread very broad at the top, their brims having ten angles, each ending in a long slender point. The flowers are of a beautiful purple on their outside, and a fatty white within; some of them are single, others have two or three flowers standing one within another; and some are double, having four or five petals within each other of equal length, so as to appear a full flower at the brim; they have an agreeable odour at first, but if long smelt to, become less agreeable, and are narcotic. The seed-vessel is thick and fleshy, as are also the partitions of the cells: the outside is covered with blunt protuberancies; and the seeds are of a bright brown colour when ripe.

[Stem rufous with white dots or linesⁿ.

Native of the East Indies and of Egypt. Cultivated 1731, by Mr. Millerⁿ.]

5. This has a strong stem three feet high, dividing into many woolly branches: the leaves have

only two or three slight indentures on their edges: the flowers have long tubes, which extend beyond the bifid calyx, then they spread out very broad where the brim is divided into ten obtuse angles; they are of a pure white above, but the tubes have a tincture of green within: they are succeeded by roundish fruit, closely covered with thorns: the seeds are of a light brown colour when ripe.

[The calyx is not angular but columnar, only swelling a little^o.

Native of Asia, Africa, and the Canary islands. Cultivated 1759, by Mr. Miller^p.]

6. This rises with a woody stalk to the height of twelve or fourteen feet, dividing into several branches. Leaves oblique, six inches long, two inches and a half broad in their widest part, growing narrower at each end, downy, on long footstalks, which stand nearer to one side than the other. The flowers come out at the divisions of the branches; they have a loose tubular calyx near four inches long, which opens at the top on one side like a spathe: the tube of the flower is narrow; but above, it swells very large near six inches in length, then spreads open at the brim, where it is divided into five angles, which terminate in very long points; they are white, with some longitudinal stripes, of a pale yellow on their outside, and are succeeded by round smooth capsules, filled with kidney-shaped seeds.

Native of South America; and one of the greatest ornaments to the gardens in Chili, where the inhabitants propagate it with great care. When the flowers are fully blown, they make a fine appearance, and a single tree will perfume the air of a large garden.

[Introduced 1783, by Mons. Thouin^q. It had however been cultivated before, both in the Chelsea garden, and by Lord Petre, from seeds sent over by Dr. Houstoun.

7. In appearance and stature this is like the other annual species. The leaves resemble those of *D. Stramonium* or *Tatula*; they are ovate and toothed. The corollas are white^r.

Native of Africa. Introduced 1780, by Mons. Thouin. It flowers from July to September^r.]

8. This rises with a purplish stem three or four feet high, dividing into several strong branches. Leaves oblong heart-shaped. Stems, branches and leaves covered with soft hairs. The flowers come out at the divisions of the stalk and branches, standing erect; they are large, white; and are succeeded by oval fruit, covered with long, soft, innocuous spines, and opening within in four cells, full of brown seeds. It grows naturally at La Vera Cruz, whence Mr. Miller received the seeds.

PROPAGATION AND CULTURE.

Most of the species, coming from hot countries, require the protection of a stove or glass-case. The second and third only are hardy, and if permitted to seed, will furnish a supply of plants for several years to come; for the seeds will be long in the ground, and when turned up to the air will vegetate.

The first, fourth, and fifth may be raised, by sowing the seeds upon a gentle hot-bed in the spring, and afterwards treating the plants in the same manner as the Marvel of Peru and other hardier kinds of annuals; transplanting them into the full ground the latter end of May. They will flower in July; and if some of the plants be placed in a glass-case, they will produce ripe seeds in autumn.

The sixth and seventh require to be kept in a stove, being more tender than the rest.

The eighth, in a favourable season, will rise in the spring from scattered seeds; and, if the summer prove warm, it will flower, and even perfect its seeds.

^o Curt. ⁿ Ibid. ^r Withering. ^s Ibid. ^t Linn. spec.
^u Hort. kew. ^v Linn. syst. ^w Hort. kew.

^o Linn. syst. ^p Hort. kew. ^q Ibid. ^r Linn. suppl.
^s Hort. kew.

DAUCUS. (*Δαυκος* Dioscor. *Daucus*, *Plin.* from *dau*, as some think: on account of its hot taste.)

Eng. Carrot. Fr. Carotte.

Lin. gen. n. 333. *Reich.* 364. *Schreb.* 466.

Gærtn. t. 20. *Juss.* 224. *Tourn.* 161.

Class. 5. 2. Pentandria Digynia.

Nat. order of Umbellatæ or Umbelliferae.

GENERIC CHARACTER.

CAL. Umbel universal manifold, flowering flat, fruiting concave-converging. Partial manifold, similar.

Involucre universal many-leaved, length of the umbel: leaflets linear, pinnatifid. Partial more simple, length of the umbellule.

Perianth proper scarce manifest.

COR. universal difform, somewhat rayed; floscules of the disk abortive. Proper of five petals, inflex-hearted, the exterior ones larger.

STAM. Filaments five, capillary. Anthers simple.

PIST. Germ inferior, small. Styles two, reflex. Stigmas obtuse.

PER. none. Fruit ovate, often hispid on every side with stiff hairs, bipartite.

SEEDS two, somewhat ovate, on one side convex, hispid, on the other flat.

ESSENTIAL CHARACTER.

Cor. subradiate, all hermaphrodite. Fruit hispid with hairs: (muricate with prickles forming longitudinal crests, G.)

SPECIES.

1. *Daucus Carota.* Wild Carrot or Bird's-nest.

Lin. spec. 348. *Reich.* 1. 667. *hort. cliff.* 89.

upf. 59. *fl. suec. n.* 237. *mat. med.* 77. *Plenck.*

ic. t. 176. *Woodv. med. bot.* 443. *t.* 161.

With. 274. *Lightf. scot.* 156. *Relb. cantabr.*

n. 216. *Hall. helv. n.* 746. *Pollich pal. n.* 273.

Scop. carn. n. 307. *Krock. files. n.* 406. *Fl.*

dan. t. 723. *Sabb. hort. 4. t.* 74. *Allion.*

pedem. n. 1380. *Villars dauph. 2. 652.* *Gærtn.*

fruct. 1. 79. Fl. rust. t. 82.

Caucalis Carota. *Huds. angl.* 114.

Daucus vulgaris. *Clus. hist. 2. 198. Neck. gallob.* 139.

D. sylvestris. *Mill. dict. n.* 1.

Pastinaca sylvestris. *Camer. epit.* 508. *Baub. hist. 3.*

62. Raii hist. 465. 2. Mor. hist. f. 9. t. 13. f. 2.

P. tenuifolia sylv. Baub. pin. 151. Ger. 873.

emac. 1028. Park. theat. 902. 2.

Staphylinus. Riv. pent. t. 28.

β. P. tenuif. fativa, radice lutea. Baub. pin. 151.

Blackw. t. 546. Mor. hist. f. 9. t. 13. f. 1. umb.

t. 2. c, f, g. Raii hist. 465. 1. Ger. 872. emac.

1027. 1. Park. 902. 1. parad. 508.

γ. P. tenuif. fat., rad. atrorubente. Baub. pin. 151.

Ger. emac. 1027. 2. Mor. f. med. ord. 1. Park.

901.

Daucus Carota. Mill. dict. n. 2.

Seeds hispid, petioles nerved underneath.

2. *Daucus mauritanicus.* Fine-leaved Carrot.

Lin. spec. 348. *syft.* 277. *Reich.* 1. 668. *mant.*

391. Allion. pedem. n. 1381. *t.* 61. *f.* 1.

Pastinaca tenuifolia, radice & umbella lutea. Mor.

hist. 3. 306. f. 9. t. 13. f. 5.—& P. tenuif. ficula

hirsuta crispa. 305. f. 3.

Seeds hispid, central floscule barren, fleshy, common receptacle hemispheric.

3. *Daucus Visnaga.* Spanish Carrot or Pick-tooth.

Lin. spec. 348. *syft.* 277. *Reich.* 1. 668. *mant.*

352. hort. cliff. 89. Jacqu. hort. 3. t. 26.

Gron. orient. 83.

Visnaga. Baub. hist. 3. 31. Raii hist. 456.—

V. Gingidium. Park. 890. f. 1.

Gingidium umbella oblonga. Baub. pin. 151.

G. alterum. Dod. pempt. 792.—hispanicum. Ger.

885. f. 2. emac. 1042. 2. Park. 891. n. 2.

Seeds glossy, universal umbel coalescent at the base.

4. *Daucus Gingidium.* Shining-leaved Carrot.

Lin. spec. 348. *Reich.* 668.

D. montanus lucidus. Tourn. inst. 307.

Gingidium. Matth. comm. 372. t. 373.—fol. chære-

folii. Baub. pin. 151.

Pastinaca fol. oenantes. Bocc. sic. 74. ic. 40. Mor.

f. 9. t. 13. f. 10.

Rays of the involucre flat: divisions recurved.

5. *Daucus muricatus.* Prickly-seeded Carrot.

Lin. spec. 349. *syft.* 277. *Reich.* 669. *mant.* 352.

Gærtn. fruct. 80.

Artediamuricata. Lin. spec. edit. 1. 242. hort. cliff. 89.

Caucalis daucoides tingitana. Mor. hist. 308. f. 9.

t. 14. f. 4. Raii hist. 468. Herm. par. 1. 111.

C. monspeliaca, echinato magno fructu. Baub. pin.

153.

Echinophora tingitana. Riv. pent. 27.

E. altera asperior platycarpus. Col. ecphr. 1. 95.

t. 94.

β. D. maritimus.

Lin. spec. 349. *Krock. files. n.* 407. *Gærtn.*

fruct. 80.

Caucalis umbella bifida, umbellulis dispermis, in-

volucris femine brevioribus linearibus. Gouan

hort. 135.

C. inv. universali diphylo, partialibus pentaphyl-

lis. Ger. prov. 237. t. 10. (good).

C. pumila maritima. Baub. pin. 153. Mor.

t. 14. f. 7.

Lappula canaria f. C. marit. Baub. hist. 3. 81.

Seeds with three-barbed prickles.

[6. *Daucus lucidus.*

Lin. syft. 277. *suppl.* 179.

Leaves lucid, stem hairy, petioles even.

7. *Daucus hispanicus.*

Allion. pedem. n. 1382. *Gouan illust.* 9.

D. lucidus gummifer. Bocc. mus. t. 20.

Seeds prickly, without any central barren flower; stem

shining.

DESCRIPTIONS, &c.

1. The common Carrot, in its wild state, has a slender, hard, whitish or brownish fusiform root. Stem upright, grooved, hispid, two feet high, with alternate branches, which are long (commonly from six or seven to nine or ten inches), have one leaf on them, except the primary or terminating one, which is naked, and have a single umbel of flowers at top. Bottom and principal leaves sheathing, tripinnate, the last pinnule toothed, and terminated by spinules, the nerves hispid. Universal involucre of the umbel pinnate, composed usually of five, sometimes only three long, linear leaflets; they are almost as long as the umbel, eight or ten in number and permanent: partial involucre, the outer trifid, longer than the umbellet, the inner ones simple. The universal umbel has sometimes from thirty to forty unequal rays, the middle rays being very short, the outer ones above an inch long: the partial umbel has fewer rays, but they also amount sometimes to more than thirty, and are more equal than the others. The flowers are white, those in the middle sometimes tinged with purple; these are fertile, but those in the circumference, which are irregular and larger than the others, are frequently either neuter or have pistils only. The fruit is spheroidal, composed of two plano-convex seeds, on the back of which are four membranaceous narrow crests, pectinated with linear-setaceous, innocuous, flexible teeth; and between these, three raised nerves, having very minute prickles on them along each side, bowing outwards: the belly is flat, or slightly concave, marked with obscure longitudinal streaks.

The wild Carrot is common in pastures, on balks and headlands. It is a biennial plant, flowering from June to August.

The umbel is at first a little convex, but becomes gradually flat, and then as the flowers are going off, more and more concave, till it forms a perfect basin, in its seeding state resembling a bird's-nest. It is then easily distinguished from other umbellate plants, and has derived its common English name from this circumstance. Others, it is said, call it *Bee's-nest*, and that name is recorded by Johnson, in his edition of Gerard's herbal.

Carrot seeds have been recommended as a powerful diuretic, and an infusion of them has been found to give relief in fits of the gravel and stone.]

Mr. Miller informs us, that the shops are supplied with old seeds of the garden Carrot, instead of fresh seeds of the wild plant. [This is one of the many ways by which efficacious medicines are brought into disrepute; but if wild Carrot seeds be really valuable in calculous cases, they may easily be gathered fresh by every one for himself.

Moles are so fond of the roots, that they are a proper bait to take these animals; but garden Carrots answer best for this purpose, as well as for destroying crickets, being made into a paste with powdered Arsenic and Wheat meal; and for poultices to mitigate the pain, and abate the stench of foul and cancerous ulcers^b.

The ladies of this polished age will smile at the simplicity of ancient times, when they are told, that the autumnal beauty of Carrot leaves allured many gentlewomen formerly, oftentimes to stick them in their hats or heads, or pin them on their arms instead of feathers^c.

Mr. Ray observed a variety of the wild Carrot on the sea shore near Dover, with leaves of a dark green and glossy colour^d. Dr. Stokes adds, that in a specimen from the coast of Cornwall the leaflets are remarkably broad, and but slightly cut^e.

β, γ. The Garden Carrot is three feet high in its flowering state; it differs however little from the wild one, except in the largeness and succulency of the plant, and particularly of the root, which with its superior size usually takes a tincture of yellow in different shades to deep orange, and becomes of a softer texture, without any of that acrimony and aromatic flavour which are found in the wild root. In Japan, where it is much cultivated, the root is of a colour very little inclined to yellow^f.]

Mr. Miller informs us, that he cultivated the wild carrot for many years, but could never get the seeds which were sown in the spring to grow, but that part of the seeds which he sowed in autumn came up well: these plants he treated in the same manner as the Garden Carrot, but could not improve the roots in the least, for they continued to be small, sticky, and of a hot biting taste. [In this and the like cases he concludes, that the plants are specifically different. This conclusion, however, is not to be admitted; for the improvement has probably been the effect of accident, or of time and care in a warmer climate; and the cultivated plants, if left to themselves in a dry undunged soil, would probably relapse into their primitive state.]

Of Garden Carrots there are several varieties differing in the colour of their roots, as white, yellow, orange, and dark red or purple. These variations may be continued, by taking care not to mix them together in the same garden. The Orange Carrot is generally most esteemed in London. Mr. Miller takes the red or purple Carrot to be a distinct sort: it is much more tender than the others, insomuch that the roots were all destroyed by the first frosts in autumn. The seeds were sent him from Aleppo. The roots were not so large as common Carrots, and were of a purple colour, very like that of a deep-coloured Radish; they were very tender and sweet; the leaves were finer cut than those of the common Carrot, and less hairy.

2. This has a channelled stalk near three feet high, terminated by large umbels. The segments of the lower leaves are cut into other obtuse segments, and are of a deep green colour.

[It much resembles the common Carrot. The whole stem is hispid. The involucre is shorter than the umbel, and quinquifid-pinnate: the involucels are three-toothed. The corolla is subradiate, with white petals, bent in and cloven^g. In the centre there is a small barren flower. The seeds are hispid^h.

It is a biennial plant; native of Italy, Spain, and

^b Withering. ^c Park, parad. 508. ^d Ray syn. 218. n. 3. ^e Withering. ^f Thunb. trav. vol. 4. ^g Linn. mant. ^h Poiret.

Barbary; and was cultivated in 1768, by Mr. Miller. It flowers in June and Julyⁱ.]

3. This is an annual plant, with an upright, smooth, channelled stalk, three feet high. Leaves smooth, divided into many fine narrow segments, like those of Fennel. The stalks branch towards the top, and each branch is terminated by a large umbel, composed of a great number of small ones. The involucre is shorter than the umbel, and each of the leaves which compose it is trifid.

[The base of the umbel is a solid, roundish, common receptacle. Involucre, as it were one-leaved at the base, is, however, many-leaved, united with the receptacle, and has trifid leaflets. Involucels many-leaved, simple. Umbellules very numerous. Flowers equal, perfect. Petals bent in, two-lobed, white. Anthers purplish. Proper receptacles purplish-brown. Fruit transversely compressed, oblong, striated, even^k.]

The rays which sustain the umbellules being long and stiff, are used by the Spaniards, &c. for picking their teeth. [When they have served this purpose, they are chewed, and thus are supposed to be of service in cleansing and fastening the gums; however this may be, they leave a pleasant aromatic taste in the mouth^l.

Native of the South of Europe, Barbary, and mount Libanus. It was cultivated in 1597 by Gerarde, and flowers from June to August^m.]

4. This is an annual plant, with smoother stalks than the common Carrot; the segments of the leaves are broader, and of a lucid green; the umbels are larger, and not so regular.

[Native of the South of France. Cultivated in 1722, in the Chelsea garden. It flowers in June and Julyⁿ.]

5. This rises with an upright stalk above two feet high. Leaves bipinnate, hairy. The stalk branches at top into several divisions, each terminated by an umbel of white flowers: [they are radiated, and the ray is small. Involucre with pinnate leaves: involucels with undivided leaves. Fruits five or seven. Seeds with compressed prickles in a triple row, and barbed at the end. Native of Barbary^o. Cultivated here in 1699^p.

β. The maritime variety is low and hirsute, with the stems almost leafless, and the germs hirsute^q.

Linneus, thinking that perhaps these differences might arise from soil and situation, has given it only as a variety. Gouan, however, has shown it to be very different; and Krocker describes it as very much resembling the common Carrot, but smaller in the stem, leaves and involucres. The umbel is also smaller, and contracts as it advances to ripeness: the florets are not radiated, three or four of them are fertile, and the rest are barren, and white in one umbel: the seeds have four longitudinal crests, very much toothed; before they are ripe they are beset with red barbs. He doubts, however, whether it may not be a variety of the common Carrot. It is annual, and flowers in July and August.

Gærtner has no doubt but that it ought to be removed from this genus into that of *Caucalis*.

Native of the South of France, on the coast of the Mediterranean.

6. This has the stature of common Carrot; but the stem has stiffer strigas on it, and is not merely rugged. The leaves are grosser, even and shining, as are also the petioles. It is biennial, and a native of Barbary^r.

7. The whole stem is rough with hairs. Leaves from a green sheath not emarginate. Branches rough. Stem three feet high, with alternate branches, and an umbel terminating it. Leaves lucid, flat above, roughish underneath: leaflets pinnatifid, with two or three pairs of awned segments. Umbellules equal. Leaves of the universal involucre

ⁱ Hort. kew. ^k Linn. mant. ^l Poiret. ^m Hort. kew. ⁿ Ibid. ^o Linn. mant. ^p Hort. kew. from Mor. ^q Linn. mant. ^r Linn. suppl.

twice trifid, with a flat membranaceous petiole; partial deeply trifid. Seeds as in the common sort, but larger. It is a biennial plant, and a native of the county of Nice*.]

PROPAGATION AND CULTURE.

In the Garden.

1. The Carrot is commonly cultivated in gardens for the kitchen, and the different varieties of it are, in some places, esteemed, though in London, the Orange Carrot is preferred to all the other.

They are propagated at two or three different seasons, or sometimes oftener, where people are fond of young Carrots. The first season for sowing the seeds is soon after Christmas, if the weather be open; this should be in warm borders, near walls, pales, or hedges, but they should not be sown immediately close thereto; but a border of Lettuce, or other young fallad herbs, of about a foot wide, should be next the wall, &c.; for if the Carrots were sown close to the wall, they would draw up weak, without making any tolerable roots.

These delight in a warm sandy soil, which is light, and should be dug pretty deep, that the roots may the better run down; for if they meet with any obstruction, they are very apt to grow forked, and shoot out lateral roots, especially where the ground is too much dunged the same year that the seeds are sown, which will also occasion their being worm-eaten; it is therefore the better method to dung the ground intended for Carrots the year before they are sown, that it may be consumed, and mixed with the earth; but in such places where there has not been ground so prepared the year before, and there may be a necessity for dunging it the same year as the Carrots are sown, the dung should be well rotted which is laid upon it, and should be thinly spread over the ground; and in the digging of it into the ground, great care should be taken to disperse it all through the ground, and not to bury it in heaps, for that will stop the roots of the Carrots in their downright growth, and cause them to be short and forked. Where the ground is inclinable to bind, there cannot be too much care taken to break and divide the parts; therefore in digging the land for Carrots, there should never be large spits taken, but they must be very thin, and the clods well broken; which, if not attended to by the master, is seldom properly performed by workmen, who are too apt to hurry over their work, if they are not well observed.

The ground when dug should be laid level and even, otherwise when the seeds are sown and the ground is raked over, part of the seeds will be buried too deep, and others will be in danger of being drawn up into heaps; so the plants will come up in bunches, and other parts of the ground be naked, which should always be carefully avoided.

The seeds have a great quantity of small forked hairs upon their borders, by which they closely adhere, so that they are difficult to sow even, so as not to come up in patches; they should therefore be rubbed well through both hands, whereby the seed will be separated before it is sown; then a calm day should be chosen to sow it in; for if the wind blows, it will be impossible to sow it equal, for the seeds being very light, will be blown into heaps. When the seed is sown, the ground should be trod pretty close with the feet, that it may be buried, and then the ground must be raked level.

When the plants are come up, and have got four leaves, the ground should be hoed with a small hoe about three inches wide, cutting down all young weeds, and separating the plants to four inches distance each way, that they may get strength; and in about a month or five weeks after, when the weeds begin to grow again, the ground should be hoed over a second time, in which you should be careful not to leave two Carrots close to each other, as also to separate them to a greater distance, cutting down all weeds, and slightly stirring the surface of the

* Allioni.

ground in every place, the better to prevent young weeds from springing, as also to facilitate the growth of the young Carrots.

In about a month or five weeks after, they must be hoed a third time, when you must clear the weeds as before; and now the Carrots should be cut out to the distance they are to remain, which must be proportioned to the size you intend to have them grow. If they are to be drawn while young, five or six inches asunder will be sufficient, but if they are to grow large before they are pulled up, they should be left eight or ten inches distant every way; you must also keep them clear from weeds, which, if suffered to grow amongst the Carrots, will greatly prejudice them.

The second season for sowing these seeds is in february, on warm banks, situated near the shelter of a wall, pale, or hedge; but those which are intended for the open large quarters, should not be sown before the beginning of march, nor should you sow any later than the end of the same month; for those which are sown in april or may, will run up to seed before their roots have any bulk, especially if the weather should prove hot and dry.

In july you may sow again for an autumnal crop, and at the end of august you may sow some to stand the winter; by which method you will have early Carrots in march, before the spring sowing will be fit to draw; but these are seldom so well tasted, and are often very tough and sticky. However, as young Carrots are generally expected early in the spring, most people sow some at this season; but these should be sown upon warm borders and dry land, otherwise they are seldom good. If the winter should prove very severe, it will be proper to cover the young Carrots with Pease-haulm, the haulm of Asparagus, or some such light covering, to prevent the frost from penetrating into the ground, which often destroys the Carrots, where this care is wanting: but if in very hard winters the Carrots should be all destroyed which were sown in autumn, there should be a hot-bed made early in the spring to sow some, which will be fit for use long before any that are sown in the full ground; but these beds should be earthed fifteen or sixteen inches deep, that the roots may have a proper depth of soil to run down. If these beds are lined with hot dung twice, at such times when the heat of the beds decline, it will greatly forward the growth of the Carrots, but there should be great care taken not to draw the plants up too weak; these may be allowed to grow closer together than those sown in the full ground, because they will be drawn for use very young. Many people mix several other sorts of seeds, as Leek, Onion, Parsnep, Radish, &c. amongst their Carrots; and others plant Beans, &c. but, in my opinion, neither of these methods are good; for, if there is a full crop of any one of these plants, there can be no room for any thing else amongst them, so that what is got by one is lost by another; and besides, it is not only more slightly, but better, for the plants of each kind to be sown separate; and also by this means your ground will be clear, when the crop is gone, to sow or plant any thing else; but when three or four kinds are mixed together, the ground is seldom at liberty before the succeeding spring: besides, where Beans, or any other tall-growing plants are planted amongst the Carrots, they are apt to make them grow more in top than root; so that they will not be half so large as if sown singly, without any other plants amongst them.

The covetousness of some gardeners will not permit them to cut out their Carrots to a proper distance when they hoe them, so that by leaving them close, they draw each other up weak: and if they are drawn while young, they never recover their strength afterward so perfectly, as to grow near the size of those which are properly thinned at the first hoeing; therefore where the Carrots are designed to have large roots, they must never stand too close, nor should they have any other crop mixed with them.

This root has been long cultivated in gardens for the table, but has not till of late years been cultivated in the fields for cattle, nor has it been practised as yet but in few parts of England; it is greatly to be wished, that the culture of it was extended to every part of England, where the soil is proper for the purpose; for there is scarce any root yet known, which more deserves it, being a very hearty good food for most sorts of animals. One acre of Carrots, if well planted, will fatten a greater number of sheep or bullocks, than three acres of Turneps, and the flesh of these animals will be firmer and better tasted. Horses are extremely fond of these roots, and for hogs there is not any better food. I have also known these roots cultivated for feeding of deer in parks, which has proved of excellent use in hard winters, when there has been a scarcity of other food; at which times great numbers of deer have perished for want, and those which have escaped, have been so much reduced, as not to recover their flesh the following summer; whereas, those fed with Carrots have been kept in good condition all the winter, and upon the growth of the grass in the spring, have been fat early in the season, which is an advantage, where the grass is generally backward in its growth.

There is also an advantage in the cultivation of this root beyond that of the Turnep; because the crop is not so liable to fail; for as the Carrots are sown in the spring, the plants generally come up well, and unless the months of June and July prove very bad, there is no danger of the crop succeeding; whereas Turneps are frequently destroyed by the flies at their first coming up, and in dry autumns they are attacked by caterpillars, which in a short time devour whole fields, but Carrots are not attacked by these vermin: therefore every farmer who has a stock of cattle or sheep, should always have a supply of these roots, if he has land proper for the purpose, which must be light, and of a proper depth to admit of the roots running down.

In preparing the land for Carrots, if it has not been in tillage before, it should be ploughed early in autumn, and then ploughed across again before winter, laying it up in high ridges to mellow by the frost; and if the ground is poor, there should be some rotten dung spread over it in winter, which should be ploughed in about the beginning of February; then in March, the ground should be ploughed again to receive the seeds; in the doing of which, some farmers have two ploughs, one following the other in the same furrow, so that the ground is loosened a foot and a half deep. Others have men with spades following the plough in the furrows, turning up a spit of earth from the bottom, which they lay upon the top, levelling it smooth, and breaking the clods; the latter method is attended with a little more expence, but is much to be preferred to the first, because in this way the clods are more broken, and the surface of the ground is laid much even.

If the land has been in tillage before, it will require but three ploughings; the first just before winter, when it should be laid in high ridges for the reasons before given; the second cross ploughing should be in February, after which, if it is well harrowed to break the clods, it will be of great service; the last time must be in March to receive the seeds; this should be performed in the manner before mentioned. After this third ploughing, if there remain great clods of earth unbroken, it will be proper to harrow it well before the seeds are sown. One pound and a half of seeds will be sufficient for an acre of land; but as they are apt to adhere together, it renders them more difficult to sow even than most other sorts; therefore some mix a quantity of dry sand with their seeds, rubbing them well together, so as to separate the Carrot seeds from each other, which is a good method. After the seeds are sown, they must be gently harrowed in to bury

them; and when the plants come up, they should be hoed in the manner before directed.

In order to preserve Carrots for use all the winter and spring, they should be dug up about the beginning of November, when the green leaves are decayed, and laid in sand in a dry place, where the frost cannot come to them.

If any are to be saved for seed, reserve some of the longest and straightest roots; plant them the middle of February in a light soil, about a foot asunder each way; and about the middle of August, when the seeds are ripe, cut off the stalks, expose them to the sun and air for several days in a dry place, beat out the seeds, put it up in bags, and keep it in a dry place until you use it. This seed is seldom esteemed good after the first or second year at most; but new seed is always preferred, nor will it grow when it is more than two years old.

[The field culture of Carrots is best carried on in a tract of Suffolk, called from the nature of its soil the *Sandlings*; it is a triangle with Woodbridge, Bawdfey cliff and Orford at the three angles. They sow five pounds of seed to the acre on a double furrow about fourteen inches deep. The time of sowing is about Lady-day; and they begin to hoe at Whitsuntide. They give three hoeings in all, which cost from fifteen to eighteen shillings an acre, sometimes more. Ten loads, of forty bushels each, topped clean, on an acre, in good land, is reckoned to be a middling crop. They feed with them from before Christmas, and continue sometimes till Whitsuntide: taking them up and housing them in the latter part of the season, to have the land clear for barley sowing.]

The time of sowing among the Sandy field gardeners is the first week in March; others sow in the middle, and others again at the end of March: but the time must be regulated in some measure by the season, and the convenience of the farmer. The time of sowing is by some extended from the beginning of February to the end of April, but this is too wide a range, if it can be avoided. New seed will come up a week sooner than that which is old; and the crop depends very much upon having good seed. Mr. Miller recommends only a pound and half of seed to be sown on an acre; but this is certainly too little. On the Sandlings we have seen that they have sown five pounds; others sow eight, ten, and even twelve pounds, which is in general wasting seed.

The common rule for the first hoeing is seven weeks after the seed is sown, or in general the beginning or middle of May; the second the middle of June; somewhat sooner or later, according to the state of the crop.

The usual produce on poor lands is 200, and on good land 400 bushels. We have had accounts of 250, 300, 312, 326, 340, 352, 368, 400, 460, 482, and even 640 and 700 bushels produced from an acre; but let the husbandman always beware of calculating on great crops, which are commonly produced on a small scale, or on very rich land, or by extraordinary tillage and manuring, or by some unforeseen fortunate circumstances.

For preserving Carrots during winter several methods are prescribed. Soon after Michaelmas, in dry weather, they may be taken up with a common dung-fork, and piled up or stacked in a corner of the field, in the following manner. Lay a platform of earth six inches above the level, two feet and a half wide, and of a length proportioned to the quantity of the crop, suppose from ten to twenty yards. On this earth scatter a slight layer of straw. On this place a row of carrots, with their tops on and turned outwards; the tails lapping over one another, so that the width covered with carrots is about two feet. Top the small roots, and lay them in the middle crosswise, to keep the two sides from parting, by pressing the weight more on the centre. On every two or three rows scatter a little straw, and thus continue to build up about four feet high:

then cover the tops carefully with dry straw, and lay some sedge or other coarse material over all, by way of thatch. Then begin another line, parallel to the first, just leaving room to pass between them; and so continue till the whole crop is taken up. Fill the alleys with dry straw, and guard the outside with bundles of straw staked down, or set fast with hurdles, to prevent the wind from removing the straw and covering^a.

Others, having taken them up in dry days in October, put them directly into small upright cocks of ten bushels each, entirely covered, with the tops cut off; and being thus dried, carry them into a barn or shed, throwing some straw over them, but taking care not to pack them too close^x.

Or they may be left in the cocks, well covered over with straw or fern till they are quite dry, and then protected with earth, beat smooth with a spade^y. Some twist off the tops with the hand; and others take off half an inch of the roots to prevent them from sprouting: but these attentions can only be bestowed on small crops.

If they are barrelled up with very dry sand, after being previously well dried, they may be preserved a considerable time at sea.

In the Sandlings the practice is to take up the Carrots as they are wanted, only keeping a store beforehand in case of frost: thus, however, in some years many rot on the ground^z.

Long experience has now confirmed what Mr. Miller asserts, that Carrots are a hearty food for sheep, cattle, horses, hogs and deer, particularly for horses; they may also be applied to feeding hounds and pointers when boiled, and mixed with milk and barley meal.

Carrots are also an excellent preparation for barley, in sands and sandy loams, that are not foul with quich or spear-grass; for in such lands the hoeing for Carrots increases rather than destroys the quich, by hacking it in pieces. No crop can be better for such lands, when clean, than Carrots; because it admits no summer ploughing whatever, and it is put in on one earth given with a trench-plough in march; so that as much tenacity is given to these naturally loose soils as possible. The crop may be left late in the ground, and if the soil be very sandy, a crop of buck-wheat may follow, for which any degree of cleaning from quich may be given, if necessary^a.

Mr. Miller's directions for ploughing are suitable to stiff land, which is not suitable to Carrots.

A very good spirit may also be distilled from Carrots; and the refuse will be excellent for feeding hogs. One ten eight stone, after being exposed a few days to dry, weighed 160 stone, and measured forty-two bushels. After being washed, topped and tailed, they lost in weight eleven stone, in measure seven bushels. From this quantity fifty gallons were drawn off; these were rectified, and twelve gallons of unexceptionable spirit were obtained. The refuse weighed forty-eight stone, and the wash from the still measured 112 gallons. So that the refuse greatly exceeds that of an acre of barley. And an acre of Carrots, allowing the produce to be twenty tons, will produce 240 gallons of spirit; which is considerably more than can be obtained from five quarters of barley^b. But the produce of an acre ought not to be laid at more than from ten to fourteen tons^c; and therefore the quantity of spirit from an acre of Carrots will not exceed 168 gallons.

Carrots have some advantages over Turneps, besides the principal one already mentioned of their being better adapted to the sort of soil which best suits them both. For they are less liable to be damaged by frost; they are not subject to the same distempers and accidents; and they last till April, the season of great difficulty, when farmers fre-

quently know not what to provide for their stock, especially sheep^d. Being also a spring crop, if the plant misses, the seed only is lost, and the land is in perfect order for turneps at midsummer: or if it be only a scattered plant, the intervals may be filled by sowing turneps, or planting cabbages^e.

Carrot seed has been for many years raised at Wethersfield in Essex, perhaps because it possesses two soils best adapted to this culture; rich sand to raise the carrots the first year, and strong loam for the year of feeding. The preparation of the soil consists in making it very fine by repeated ploughings and harrowings, usually three or four earths are given; and the seed, twenty pounds an acre, apparently an unnecessary quantity, sown in April. They hand-hoe twice, setting the plants out seven inches asunder. At Michaelmas they dig up, cut off the tops to the length of an inch, and pack up the roots in barns with straw, taking care that they are dry enough when laid up: securing them is a work of some difficulty, for air must have access to them, and yet frost must be excluded. The crops are large; a good produce is three bushels on a rod, but four have been known. For re-planting in the spring, they choose a piece of fresh land, if there be any on the farm; if not, such as is in good heart, but they never manure it. The preparation is to throw two three feet ridges together; in a dry season, in February or March, they cut the tap end of the carrots off, to the amount of one third of the root, and plant a double row upon each ridge at three feet between the plants, and two feet row from row, in a quincunx order, so that the plants of one row may be against the spaces of the other. They are twice hoed, and twice earthed up; the second time very high. The heads are cut off when quite dry, as they ripen, by women, and being laid on pack cloths, are threshed and dressed by men^f.

Carrots may be cultivated with success in young plantations of trees; where the soil is proper for them. In taking up the carrots, less damage is done to the young fibres of the trees than by digging between them, all the good effects of stirring the ground are produced, and a profitable crop is gained^g.

Mr. Miller affirms that this root has not till of late years been cultivated in the fields for cattle. It appears from Norden's Surveyor's Dialogue, published in 1600, that carrots were commonly cultivated about Orford in Suffolk, and about Norwich in Norfolk^h. They were also introduced very early from Flanders into Kent, about Sandwich, and other places. Gerarde, in 1597, says that they were sown in the fields. Neither of these authors, however, mentions that they were used for feeding cattle: they were probably cultivated chiefly for the London market. Worlidge and Mortimer say, that they are good for hogs and geese.

2, 3, &c. Of the other sorts of *Daucus* it is enough to say, that] the seeds should be sown in autumn, for those which are sown in the spring frequently fail, or at least remain in the ground till next year before they grow; the plants require no other culture but to keep them clean from weeds, and to thin them where they are too close.

[*DAUCUS*. See *Æthusa*, *Anmi*, *Athamanta*, *Caucalis*, *Peucedanum*, *Phetlandrium*, *Pimpinella*, *Seseli*, *Sison*, *Sium*.

D'AYENIA. See *Ayenia*.

DAY-LILY. See *Hemerocallis*.

[*DEADLY CARROT*. See *Thapsia*.

DEADLY NIGHTSHADE. See *Atropa*.

DEAD-NETTLE. See *Galeopsis*, and *Lamium*.

DECASPERMUM. See *Psidium*.

DECUMARIA.

Lin. gen. n. 597. *Reich.* 652. *Schreb.* 815.

Fabric. Willich. *Juss.* 324.

^d Young in Bath papers, 2. p. 8. ^e Onley in Young's ann. 3. 222.

^f Young's ann. 18. 407. ^g Ibid. 15. 362.

^h Young in Bath papers, 2. 2.

^a Young's ann. 11. 328.

^x Bath papers, 5. 237.

^y Farmer's magaz. 1. 259.

^z Young's ann. 2. 126.

^a Young in Bath papers, 2. p. 1.

^b Hornby in Young's ann. 9. 168.

^c Young, *ibid.* 170.

Class. 11. 1. { Dodecandria Monogynia.
Polyandria Monogynia. Hort. kew.
Nat. order of Myrti. Juss.

GENERIC CHARACTER.

CAL. Perianth superior, with about ten leaves, very small: leaflets ovate, coloured, acute, reflex. (8—12.)

COR. Petals ten, lanceolate, obtuse, equal, disposed in a simple circle, expanding. (8—12)

STAM. Filaments from sixteen to twenty-five, filiform, length of the corolla. Anthers twin, depressed.

PIST. Germ top-shaped, inferior. Style cylindric; shorter than the corolla. Stigma gibbous, lobed with about ten little swellings.

PER. Capsule eight-celled, many-seeded.

SEEDS solitary?

OBS. This is an obscure genus, the fruit being unknown to this day. May it not prove to be dioecious?

ESSENTIAL CHARACTER.

Cal. eight to twelve-leaved, superior. Pet. eight to twelve. Caps. eight-celled, with many seeds.

SPECIES.

1. *Decumaria barbara*. Climbing *Decumaria*.

Lin. spec. 1663. syst. 443. Reich. 2. 417. mant.

391: Willich. obs. 75.

Forsythia scandens. Walter. carol. 154.

Clusia fol. venosis. Fabric. helmst. 2. 293.

DESCRIPTION, &c.

A tree with irregular branches, rooting by knotty joints. Leaves opposite, petioled, opposite, leathery, veined, towards the base remotely serrate. No stipules. Buds pubescent. Panicle corymbed, terminating. Flowers like those of the Lime-tree, whitish, and very sweet scented¹.

Native of Carolina. Where it was observed by Mr. Walter, who supposing it to be a new plant, named it *Forsythia*, in honour of Mr. William Forsyth, Mr. Miller's successor in the cultivation of the Botanic garden at Chelsea, and since Gardener to his Majesty at Kensington.—Introduced 1785, by Baron Hake².

DELIMA. (From Lima, a file; the leaves being used for polishing.)

Lin. gen. n. 672. Reich. 721. Schreb. 905.

Juss. 339. Gertn. t. 106.

Class. 12. 1. Polyandria Monogynia.

Nat. order of Rosaceae. Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets ovate, obtuse, equal, permanent.

COR. none.

STAM. Filaments numerous, capillary, nearly equal to the calyx. Anthers roundish.

PIST. Germ superior, somewhat ovate. Style cylindric, length of the flower. Stigma simple, permanent.

PER. Berry larger than the calyx, ovate, acuminate, two-valved. (Capsule coriaceous, one-celled. G.)

SEEDS two, (arilled. G.)

OBS. Rbeede makes his plant pentandrous; it is therefore doubtful.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. none. Berry with two seeds.

SPECIES.

1. *Delima farmentosa*.

Lin. spec. 736. syst. 494. Reich. 2. 587. fl. zeyl.

n. 205. amæn. t. 403. Gertn. fruct. 2. 112.

Rbeed. mal. 7. t. 34. (Peripu.) Burm. ind. t. 35. f. 1.

DESCRIPTION, &c.

A tree, with scabrous leaves, resembling those of Beech. Flowers peduncled, loosely paniced, both axillary and terminating¹. Fruit a coriaceous, swelling capsule, ending in an incurved beak, very smooth, of a yellow bay colour, opening on one side only by a longitudinal cleft. Seeds two, globular, crooked next the base, berried, red, becoming blackish when ripe, fixed to the bottom of the capsule; their aril is incomplete, spongy-membrana-

ceous, snow-white, torn at the edge, scarcely covering the lower half of the seed^m.

The leaves being very thick and rugged, are used by the inhabitants of Ceylon, where it grows naturally, in polishing. Hence they name it *Korossawael* or *Korossawael*, from *Korossa*, to smooth or polishⁿ.]

DELPHINIUM. (Δελφινιον Dioscor. from a fancied resemblance of the flower, before it opens, to a dolphin. —Consolida, from its consolidating qualities.)

Lin. gen. n. 681. Reich. 736. Schreb. 927.

Tourn. 241. Gertn. t. 65. Juss. 234.

Class. 12. 3. Polyandria Trigynia.

Nat. order of Multiflorae.—Ranunculaceae. Juss.

GENERIC CHARACTER.

CAL. none.

COR. Petals five, unequal, disposed in a circle; of which

α. the uppermost is more obtuse than the rest in front, and is extended behind into a tubular, straight, long, obtuse horn.

β. γ. δ. ε. the rest ovate-lanceolate, spreading, nearly equal. Nectary two-cleft, seated in front within the circle of petals on the upper part, behind stretched out, involved within the tube of the petal α.

STAM. Filaments very many (fifteen or thirty), subulate, wider at the base, very small, inclined towards the petal α. Anthers erect, small.

PIST. Germs three or one, ovate, ending in styles the length of the stamens. Stigmas simple, reflex.

PER. Capsules as many, ovate-subulate, straight, one-valved, gaping inwards.

SEEDS very many, cornered.

OBS. The first and second species have three pistils, and an inner nectary of one leaf.

Several species have a two-leaved nectary, disposed in the same form as in those species which have a simple nectary.

ESSENTIAL CHARACTER.

Cal. none. Petals five. Nectary cloven, produced into a horn behind. Siliques three or one.

SPECIES.

* Unicapular.

1. *Delphinium Consolida*. Branching Larkspur.

Lin. spec. 748. Reich. 2. 611. hort. cliff. 212.

fl. suec. n. 475. mat. med. 138. Hudf. angl.

235. With. 560. Relb. cant. n. 692. Hall.

helv. n. 1203. Scop. carn. n. 651. Pollich.

pal. n. 512. Neck. gallob. 233. Krock. filef.

n. 831. Villars dauph. 3. 702. Fl. dan. 683.

Blackw. t. 26.

D. fegetum. Tourn. inst. 426. Raii syn. 273.—arvense. Park. parad. 277. n. 3. 279. f. 3.

Consolida regalis. Camer. epit. 521. Park. theat. 1378. f. 2.—arvensis. Baub. pin. 142. Raii

hist. 708.—fl. minore. Baub. hist. 3. 210.—syl-

vestris. Ger. 923. 4. emac. 1083. 5. 1082. 1.

Fuchf. 27. Lob. ic. 1. 739. 2.

Nectaries one-leaved, stem subdivided.

2. *Delphinium Ajacis*. Upright Larkspur.

Lin. spec. 748. syst. 503. Reich. 2. 612. hort.

cliff. 213. upf. 150. Hall. helv. n. 1202.

Krock. filef. n. 832.

D. fativum. Rivin. pent. t. 123.

α. Consolida regalis hortensis, fl. majore & simplici. Baub. pin. 142. Mor.

Delphinium clatius fl. simplici diversorum colorum. Park. par. 277. n. 4. Raii hist. 708.

β. C. reg. fl. maj. & multiplici. Baub. pin. 142.

D. elat. fl. pleno divers. colorum. Park. par. 277. n. 5.

Nectaries one-leaved, stem simple.

[3. *Delphinium Aconiti*.

Lin. syst. 503. Reich. 2. 612. mant. 77. Vahl

symb. 1. 40. t. 13.

D. orientale annuum, fl. singulari. Tournef. cor. 30.

Nectaries one-leaved, with four teeth in front, branchlets one-flowered.]

¹ Linn. mant.

² Hort. kew.

³ Jussieu.

^m Gartner.

ⁿ Burmann.

** *Tricapular.*

4. *Delphinium ambiguum*, *Doubtful Larkspur*.
Lin. spec. 749. *Reich.* 2. 613.
D. elatius, *simplici flore*. *Clus. hist.* 2. 206.
Consolida regalis hortensis, *fl. minore*. *Baub. pin.* 142.
Nectaries one-leaved, corollas six-petalled, leaves many-parted.
5. *Delphinium peregrinum*. *Broad-leaved annual Larkspur*.
Lin. spec. 749. *synt.* 503. *hort. cliff.* 213. *Allion. pedem. n.* 1503. *t.* 25. *f.* 3.
Consolida regalis latifolia, *parvo flore*. *Baub. pin.* 142. *prodr. t.* 74. *f.* 1. *Mor. hist.* 3. 466. *f.* 12. *t.* 4. *f.* 3.
Nectaries two-leaved, corollas nine-petalled, leaves many-parted obtuse.
6. *Delphinium grandiflorum*. *Great-flowered Larksp.*
Lin. spec. 749. *Reich.* 2. 614. *hort. upf.* 150.
Mill. fig. t. 250. *f.* 1. *Gmel. sib.* 4. *t.* 78.
Nectaries two-leaved, with entire lips; flowers usually solitary; leaves compound linear-many-parted.
7. *Delphinium intermedium*. *Palmated Bee Larkspur*.
Ait. hort. kew. 2. 243.
D. americanum. *Mill. dict. n.* 7. *fig. t.* 119.
D. elatum. *Mattusch. filef.* 132.
Nectaries two-leaved, with ovate cloven lips, and ovate divisions; leaves three-parted, with trifid gashed divisions.
8. *Delphinium elatum*. *Common Bee Larkspur*.
Lin. spec. 749. *Reich.* 2. 614. *hort. upf.* 151. *cliff.* 213. *Hall. belv. n.* 1201. *Gmel. sib.* 4. 187. *t.* 75—80. *Gartn. fruct.* 1. 311. *Villars dauph.* 3. 702.
Aconitum cæruleum hirsutum, *fl. consolidæ regalis*. *Baub. pin.* 183.—*calcar magno*. *Baub. hist.* 3. 657.
β. A. lycostomum, *fl. delphinii filesiaci*. *Clus. hist.* 2. 94. *Dodon. purg.* 315. *hist.* 441.
Nectaries two-leaved, with ovate emarginate lips, and very short unequal divisions; leaves subpeltate three-parted, with multifid divisions.
9. *Delphinium exaltatum*. *American Larkspur*.
Ait. hort. kew. 2. 244.
D. elatum. *Mill. dict. n.* 5. *fig. t.* 250. *f.* 2.
Nectaries two-leaved, with oblong cloven lips, and lanceolate equal divisions; leaves three-parted, with trifid divisions.
- [10. *Delphinium puniceum*. *Scarlet-flowered Larksp.*
Lin. syst. 503. *suppl.* 267. *Pallas itin.* 3. 96. *Retz. obs.* 5. 4.
Lips of the nectary two-parted hairy, born straight; leaves many-parted; no calycine bractes.]
11. *Delphinium Staphisagria*. *Palmated L., Staves-acre, or Lousewort*.
Lin. spec. 750. *syst.* 503. *Reich.* 2. 614. *mat. med.* 138. *hort. cliff.* 213. *upf.* 150. *Scop. carn.* 2. n. 652. *Allion. pedem. n.* 1505. *Woodv. med. bot.* 417. *t.* 154.
Staphisagria. *Baub. pin.* 324. *Dod. pempt.* 366. *Blackw. t.* 265. *Baub. hist.* 3. 641. *f.* 2. *Ger.* 398. *emac.* 495. *Park. theat.* 222. *f.* 223. *Rain hist.* 705. *Fuchf.* 784.
Nectaries four-leaved shorter than the petal; leaves palmate with the lobes obtuse.

DESCRIPTIONS, &c.

[These are mostly specious hardy annuals or perennials. The lower leaves digitate or palmate; the upper less divided, and sometimes even entire. The flowers are in loose spikes or panicles at the ends of the stem and branches, of various colours, but chiefly blue; never yellow:

1. Root annual. Stalk upright, a foot high or more, round, pubescent, divided into alternate diverging branches. Leaves alternate, the lower on petioles near half an inch long, the upper sessile or nearly so; they are divided down to the base into three or five parts, which are deeply cut into slender linear segments, often forked at the end. Peduncles one-flowered, from the ends of the stalk and branches, having on them a few entire, awl-shaped leaves. Corolla blue, varying to purple, pink, and white,

and in gardens to striped, and many different shades of colour: petals irregularly scalloped on the edge; the lateral ones broadest, the uppermost lanceolate, not blunter than the rest, rather shorter than the nectary, but projecting backwards into a conical tube. Stamens about seventeen: anthers roundish, double. It has frequently two styles, and sometimes only one. Capsules or siliques yellowish-brown, smooth, with nine or ten black shining seeds in them, placed in a double row, and rough with short hairs and very small tubercles^a.

In English it is called Wild or Corn Lark's-spur, Lark's-claw, and Lark's-toes. In French, *Pied d'Allouette*. In German, *Rittersporn*. In Danish and Swedish, *Ridderspore*. In Italian *Speronella*. In Spanish, *Espuela de caballero*.

It grows wild in corn fields in Sweden, Denmark, Germany, France, Switzerland, Carniola, Italy, and Spain. It was not observed in a wild state in Britain by Gerard; and his editor Johnson (an^o 1636) expressly says, not with us, that I have yet observed. Parkinson however, in his *Paradisus*, published seven years sooner, affirms, that the lesser wild kind is found in some fields of our own country; but he does not say that he had seen it. James Sherard, M. D. observed it in Swaffham field in Cambridgeshire. Professor John Martyn found it there, and in other fields of the same county about the year 1730; and I have remarked it abundantly, not only with blue, but with pink, purple, and white flowers, in most of the open fields round Cambridge, ever since the year 1752.

The expressed juice of the petals, with the addition of a little alum, makes a good blue ink. The seeds are acrid and poisonous^b.

2. The stalk of the upright or garden Larkspur is eighteen inches and more in height, and seldom branched. Leaves finely divided, commonly by threes, on broad petioles; segments linear, quite entire, channelled above. Spike of flowers erect and more dense than the preceding. Commonly only one capsule or silique^c. This affords a great variety of colours, in the flowers, both single and double, some very large and numerous in close spikes, making a fine appearance from the end of June to August.

The original country of this is unknown. It now comes up spontaneously in several parts of Europe, but probably from garden seeds. Linneus and others are of opinion that the Larkspur is the *Hyacinth* of the poets. Professor John Martyn however, after profoundly considering the matter, determines it to be the *Lilium Martagon*; and the learned Heyne acquiesces in his opinion. There does not appear to me to be the least foundation for Linneus's notion.

3. Stature the same as in the first or fifth species, with corollas of Aconite. Stem a foot high, panicled, branching, hoary, pubescent. Leaves pedate-multifid, linear, becoming hoary; the upper ones only three-parted. Flowers terminating, solitary, peduncled, small, livid, variegated within with purple and green. Outer nectary tubular, longer than the petals, very obtuse at the end, elongated at the base, so that the anterior horizontal lip is placed in the middle. The inner nectary embraces the stamens on both sides with an obtuse lobe, but in front and above it has four teeth nearly equal and marked on the edge with a purplish line: the tip is very obtuse and thick, and is bent back with a contracted neck; the four lower petals are ovate-lanceolate, equal, greenish but purplish on the sides. Stamens the length of the petals, purplish.

Native of the Dardanelles. Annual^d.

4. Stature of the second sort, but more hoary. Branches divaricating in a simple stem. Corollas blue with a green outside. Nectary cloven with acutish lobes; spur having frequently two teeth at the tip.—It differs from the monogynous species in

^a Pollich, Withering, Relhan. ^b Withering. ^c Haller.
^d Linn. mant.

the number of the capsules; from the trigynous species in having the inner nectary one-leaved, or the inner spur not two-parted; therefore these cannot be separated from the genus of *Staphisagria*. The pistils are either one or three in the same plant, so that the number of these is hardly constant.—Native of Barbary*]

Stalk three feet high or more and very branching; the branches come out horizontally at first, but afterwards turn up so as to make an acute angle with the stalk; the leaves are long and finely divided: the flowers are placed thinner in the spikes than those of the upright sort, are large, and some of them very double and of various colours. This comes later to flower than the upright Larkspur.

5. This has a very branching stalk, about two feet high. The lower leaves are divided into many broad obtuse segments, but those which are upon the stalks are generally single; the flowers grow scatteringly towards the upper part of the branches, are small, and of a deep blue colour; they are succeeded by very small seed-vessels, which are single or double, rarely three together.

[Stem simple, with wand-like, naked, stiff branches. Leaves like those of the second sort. Bractes subulate. The corolla, besides the nectaries or four lower petals, has two roundish lateral petals, fixed by long claws, and bent down towards the outer or lowest petals and lying on them. The nectaries have no deflex lips†.

Native of the South of Europe and the Levant. Cultivated in 1731, by Mr. Miller‡,] who had the seeds from Gibraltar.

6. This has a perennial root, which puts out two or three branching stalks every spring, which rise about a foot and a half high. Leaves smooth and of a light green colour above, and hoary beneath, composed of many narrow segments, which terminate in several acute points. The flowers come out towards the upper part of the stalks singly, each on a long naked peduncle; they are large, and of a fine azure colour. They appear in June and July, and the seeds ripen in autumn.

[Capsules hoary^b.—Native of Siberia. Cultivated in 1758, by Mr. Miller¹,] who had the seeds from Dr. Ammann, of Petersburg.

7. [Root perennial, with annual stems growing to the height of six or seven feet. Leaves broad, divided into five or seven parts, cut into many narrow segments towards the top, they are alternate from the joints on long footstalks, so that they hang down. Flowers in long spikes at the extremities of the stalks. Corollas of a fine blue colour^k.

Mr. Miller had first set this down as an American plant. Afterwards he informs us that the seeds were sent him from Petersburg by the late Dr. Ammann: he therefore supposes it to be a native of Siberia or Tartary: it turns out however to be a native of Silesia. It seems to be the variety of *D. elatum* mentioned by Krock.

Cultivated 1756, by Mr. Miller¹.

8. Height of a man. Root perennial. Leaves slightly villose, becoming smooth by age, half-five-lobed, petioled; lobes acute, often half-three-lobed, sharply ferrate. Spike of flowers very long and handsome; peduncles one-flowered, lanuginose; corollas deep blue, with a wrinkled spur^m.

Native of Switzerland and Siberia. Cultivated 1656, by Mr. John Tradescant, junior. Flowers from June to Septemberⁿ.

9. Root perennial. Stem upright, five or six feet high, branching. Lower leaves large, divided into three lobes to the petiole, and these cut on their borders into acute segments: they are a little hairy, and of a grayish colour, standing upon pretty long petioles. Stem-leaves smaller, and not so deeply divided. The principal stalk is terminated by a long loose spike of flowers, which is often a foot and a half long. The small side-branches, which

grow erect, have smaller spikes. The flowers are not much larger than those of the common Larkspur, and are of a pale blue colour. The bearded nectary has, at first sight, the appearance of a large fly in the tube of the flower.—It flowers at the end of June, or beginning of July, and in cool seasons there is frequently a succession of flowers till the end of August. The seeds were sent to Mr. Miller by Mr. John Bartram (about 1758) from Philadelphia; but it grows naturally in most parts of North America, where it occasions great disorders in the cattle that feed upon the leaves^o.

This approaches very near to *D. urceolatum*, *Jacqu. ic. collect.* 1. 153. but it differs in having the leaves smooth and flat; the stem smooth and purple^p.

10. This differs from all the other sorts in the dusky red colour of the flowers as in *Veratrum nigrum*.—It is very like *D. elatum* in every thing, except that the stem, petioles and peduncles are pubescent, the petals equal, the whole corolla more regular, the lips deeply parted and straight, the horn straight, even, and the length of the pedicels; no subulate bracte on each side the base of the corolla^q.

It is a perennial plant^r.—Found in Siberia, by Pallas. Introduced 1785, by William Pitcairn, M. D.^s]

11. This is an annual plant, rising with a strong hairy stalk about two feet high. Leaves hairy, composed of five or seven oblong lobes, which have frequently one or two acute indentures on their sides. The flowers form a loose spike at the upper part of the stalk, each on a short peduncle. They are of a pale blue or purple colour.

[Linneus observes, that the lobes of the leaves are trifid. Horn of the nectary very short and obtuse.

A variety with leaves veined with white, differs in having the leaf gashed, seven-parted, the divisions acuminate, the horn or spur of the corolla not obscure, but the length of the pedicel^t.

Native of the South of Europe. Cultivated in 1596, by Gerarde. It flowers from April to August; and is biennial^u.]

The common people use the powder of the seed to kill lice, whence it is named Lousewort.

PROPAGATION AND CULTURE.

1—5. The annual sorts are propagated by seeds, which should be sown where the plants are designed to remain, for they do not bear transplanting well, especially if they are not removed very young; those seeds which are sown in autumn, produce the strongest plants and most double flowers, and ripen their seeds better than those which are sown in the spring, as they come earlier to flower; but to continue a succession of these flowers, there should be some seeds sown in the spring. When they are sown on the borders of the flower-garden for ornament, they should be in patches of about a foot diameter, in the middle of the borders at proper distances; in each of these patches may be scattered ten or a dozen seeds, covering them over about a quarter of an inch with earth; and in the spring the plants may be thinned, leaving about five or six of the upright sort in each patch to stand for flowering; but of the branching sort, not more than three or four, because these require room; after this the plants will require no farther care but to keep them clean from weeds, and when they begin to flower should be supported by flower-sticks to prevent their being broken by wind, especially if they are not in a sheltered situation. If the seeds were well chosen, there will be very few ordinary flowers among them; and if there are seeds of the different coloured flowers sown in each patch, they will make a pleasing variety: but the upright sort should never be mixed in the same patches with the branching, because they do not flower at the same time.

* Linn. spec.
† Hort. kew.

‡ Ibid.

§ Hort. kew.

¶ Linn. spec.

¹ Mill. fig.

² Hort. kew.

³ Haller.

• Miller's figures.

• Hort. kew.

• Hort. kew.

• Linn. syst.

• Linn. suppl.

• Hort. kew.

• Retz.

But in order to preserve the two sorts fine without degenerating to single or bad colours, there should be a bed of each sort sown in autumn, in some separate part of the garden, where the plants should be properly thinned, and kept clean from weeds, till they begin to shew their flowers; when they should be carefully looked over every other day, to pull out all those plants, whose flowers are not very double nor of good colours; for if these are permitted to stand among the others till their farina has impregnated them, it will certainly cause them to degenerate; so that those persons who are contented with only marking their good flowers for seed, and suffer the others to stand for seed among them, will always find themselves disappointed in the goodness of their flowers the following season: therefore those who propose to have these flowers in perfection, should never gather the seeds of such as grew in the borders of the flower-garden; because there it will be almost impossible to preserve them so true, as when they are in beds at a distance from all other kinds.

When the seed-vessels turn brown, they must be carefully watched, to gather them before they open and discharge the seeds; because those which are situated on the lower part of the stalk, will open long before those on the upper part of the stalk are ripe; for which reason the pods should from time to time be gathered as they ripen, and not suffered to stand till the stalks are pulled up, which is often practised. Those pods which are situated on the lower part of the stalks, are much preferable to such as grow near the top; for which reason those who are very curious in the choice of their seeds, crop off the upper part of the spikes of flowers, and never suffer them to stand for seeds.

As these plants are very hardy, and require so little care in their culture, they are worthy of a place in every good garden; and during their continuance in flower, there are few plants which make a better appearance; for gathering to make flower-pots to adorn rooms, there is scarce any flower so proper; because by their upright growth and long spikes, they rise to a proper height above the pots; and when the several colours are skilfully intermixed they make a rich appearance, and continue long in beauty.

6—10. All the perennial Larkspurs are propagated by seeds, which, if sown in autumn, will more certainly succeed, than those which are sown in the spring; when the plants come up, they should be kept clean from weeds, and where they are too close together, part of them should be drawn out, to allow room for the others to grow till the following autumn, when they must be planted where they are to remain; the following summer they will flower, and the roots continuing many years growing in magnitude, will produce a great number of flower-stalks.

11. The seeds should be sown where the plants are to remain.

["It is with great difficulty (says Gerarde) preserved in our cold countries, albeit in some mild winters, I have kept it covered over with a little ferne to defend it from the injury of the march wind, which doth more harm unto plants that come forth of hot countries, than doth the greatest frost."—This is a sensible observation; and although Mr. Miller affirms that the Staveacre requires no other treatment than the common Larkspur, yet we frequently find that the plants committed to the open air without protection in our climate are killed in severe seasons.]

DENS CANINUS. See *Panicum*.

—CANIS. See *Erythronium*.

—LEONIS. See *Arnica*, *Apargia*, *Hieracium*, *Hyoferis*, *Hypochaeris*, *Leontodon*, *Tussilago*.

DENTARIA. (From the toothed form of the root. See *Tournefort's figure*.)

Engl. *Toothwort*. Fr. *Dentaire*.

Lin. gen. n. 811. Reich. 875. Schreb. 1087. Tourn. 110. Juss. 239.

Class. 15. 2. *Tetradynamia Siliquosa*.

Nat. order of *Siliquosa*. *Cruciferae*. Jussieu.

GENERIC CHARACTER.

CAL. *Perianth* four-leaved: *leaflets* ovate-oblong, converging from parallel, obtuse, deciduous.

COR. four-petalled, cruciform. *Petals* roundish, obtuse, scarce emarginate, flat, ending in claws the length of the calyx.

STAM. *Filaments* six, subulate, length of the calyx, of which two are shorter. *Anthems* cordate-oblong, erect.

PIST. *Germ* oblong, length of the stamens. *Style* very short, thick. *Stigma* obtuse, emarginate.

PER. *Siliqua* long, columnar, two-celled, two-valved, bursting open elastically with the valves rolled back: *dissepiment* a little longer than the valves.

SEEDS many, somewhat ovate.

ESSENTIAL CHARACTER.

Siliqua bursting elastically with the valves rolled back.

Stigma emarginate. *Cal.* converging lengthwise.

SPECIES.

1. *Dentaria enneaphylla*. *Nine-leaved Toothwort*.

Lin. spec. 912. Reich. 3. 243. Jacq. vind. 119. austr. 4. t. 316. Scop. carn. n. 812. Krock. files. n. 1045.

D. triphyllus. Bauh. pin. 322. Clus. hist. 2. 121. n. 5. Raii hist. 784. Park. theat. 619. 4.

D. coralloide rad. f. enneaphyllon. Ger. 833. f. 2. emac. 984. 2.

Coralloides enneaphyllos. Bauh. hist. 2. 902. — *triphyllus*. Gesn. fasc. 4. t. 2. f. 4.

Ceratia Plinii. Col. ecphr. 1. 308. t. 307.

Leaves in three times three.

2. *Dentaria bulbifera*. *Bulbiferous Toothwort*, or *Coralwort*.

Lin. spec. 912. Reich. 3. 243. hort. cliff. 335. fl. suec. n. 584. Hudf. angl. 285. With. 683.

Hall. helv. n. 470. Scop. carn. n. 813. Krock. files. n. 1047. Fl. dan. t. 361. (good). Ger. 833. 1. emac. 984. 1. Park. theat. 620. f. 1.

D. baccifera. Clus. hist. 2. 121. 1. Lob. ic. 1. 687. 2. Raii hist. 785.

D. heptaphyllos bacc. Bauh. pin. 322.

Coralloides. Cord. hist. 151. — *minor bulbifera*. Bauh. hist. 2. 902.

β. *D. baccifera*, fol. ptarmicæ. Bauh. pin. 322. Raii hist. 785.

D. angustifolia bacc. Park theat. 620 f. 6.

Lower leaves pinnate, upper simple.

3. *Dentaria pinnata*. *Seven-leaved Toothwort*.

De Lamarck encycl. 2. 268. Ait. hort. kew. 2. 386.

D. pentaphyllos α. Lin. spec. 912. syst. 593. Reich. 3. 244. Krock. files. n. 1046. β. Hall. helv. n. 469. β.

D. fol. pinnatis & digitatis. Ger. prov. 356. 1.

D. heptaphyllos. Bauh. pin. 322. Garid. prov. 152.

t. 28. Raii hist. 785. Ger. 834. 3. emac. 985. 3. Park. theat. 620. f. 5. Villars dauph. 3. 364.

Coralloides altera f. septifolia. Bauh. hist. 2. 899.

All the leaves pinnate: (lower with seven, upper with five leaflets, Hall.)

4. *Dentaria pentaphylla*. *Five-leaved Toothwort*.

Ait. hort. kew. 3. 387. Villars dauph. 3. 364.

D. digitata. De Lam. encycl. 2. 268.

D. pentaphyllos β. Lin. spec. 912. syst. 593. Reich. 3. 244. Hall. helv. n. 469. α. Scop. carn. n. 814. Krock. files. α.

D. fol. omnibus quinato-digitatis. Ger. prov. 356. 2.

D. pentaphyllos fol. mollioribus. Garid. prov. 152. t. 29.

D. pentaphyllos. Bauh. pin. 322. Raii hist. 784.

Ger. 834. 4. emac. 985. 4. Park. theat. 620. f. 2. *Coralloides prima quinquefolia*. Bauh. hist. 2. 899. f. 1.

Leaves digitate.

DESCRIPTIONS, &c.

1. [Root perennial, white, toothed, long, of a pleasant taste. Stem a foot or a foot and a half in height, branched, round, and smooth. Leaves biternate; leaflets lanceolate, serrate, acuminate, smooth. Flowers from three peduncles forming a panicle or raceme, erect, fascicled. Calyx pale green or yellowish.

lowish. Petals reddish yellow or yellowish red^a. In the situation of the leaves it resembles *Anemone*, in their form *Eupatorium*. There is a gland on each side between the longer stamens and the calyx, and one surrounding the base of each shorter stamen. The stamens are all nearly of a length. In each cell are four seeds. Most of the upper flowers are abortive^b.

Native of Hungary, Austria, Idria in Friuli, Silesia, &c. in woods. It flowers in april and may.—Called by Gerarde *Coral-toothed Violet*.

2. Bulbs produced from the axils of the leaves as in *Lilium bulbiferum*, and the fruit in like manner abortive^c.

Stem simple. Lower leaves have three pairs of leaflets and an odd one, which is confluent with the pair below it; they are bluntly lanceolate and serrate; the leaves above these have five leaflets, and the upper leaves are trifid or simple, acutely lanceolate, serrate. Corollas flesh-coloured. The scaly bulbs in the axils of the upper leaves, falling off, take root, and propagate new plants; so that it rarely produces seed^d. Root perennial: plant more tender than the others, petals purple, white or reddish. There is a gland between each shorter stamen and the calyx, and a smaller one cloven half way between the longer stamens and the calyx; sometimes this gland is entire, and sometimes it is trifid, with the middle tooth longest^e.—It flowers in april and may.

Native of Sweden, Denmark, Switzerland? Germany, Carniola; Piedmont, England, in moist woods and shady places. With us it is rare, having only been observed by Parkinson in Highreed and Foxholes woods, near Mayfield, Suffex; by Blackstone, in Old Park wood, near Harefield; and between Beaconsfield and Wycomb, Bucks, by Mr. Hudson. Named by Gerarde *toothed*, or *dog-tooth Violet*. He cultivated it in his garden.

3. This may be fairly separated from the next species, the difference in the leaves being permanent. They agree however in the flowers^f.

Native of Switzerland, the South of France and Silesia. Mounts Jura and Saleva.—Cultivated in 1683, by Mr. James Sutherland^g.]

4. This rises with a strong stalk a foot and half high, with a leaf at each joint, composed of five lobes, four inches long, and near two broad in the widest part, ending in acute points, and deeply serrate; they are smooth and stand on long footstalks. The flowers grow in loose spikes at the top of the stalks; they are small, of a bluish colour. Pods long and taper, filled with small, roundish seeds.

[Calyx erect. An emarginate or slightly notched gland between the calyx and each shorter stamen. Leaves three or four, the two lower quinate, the two upper ternate^h. Calyx purple; petals white, red or violet on the outsideⁱ.

Native of Switzerland, Savoy, the South of France, Carniola, Silesia. Ray observed it abundantly on mount Jura.

Cultivated in 1656, by John Tradescant^k.]

PROPAGATION AND CULTURE.

These plants are propagated by seeds, or parting their roots; the seeds should be sown in autumn, soon after they are ripe, in a light sandy soil and a shady situation: in the spring the plants may be taken up where they grow too close, and transplanted out in the like soil and situation; where, after they have taken root, they will require no farther care, but to keep them clear from weeds: the second year they will produce flowers, and sometimes perfect their seeds.

The best time to transplant the roots is in october, when they should be planted in a moist soil and a shady situation; for they will not live in a dry soil, or when they are exposed to the sun.

[The bulbs produced on the stalks of the second sort, if planted, will grow, and produce other plants.

^a Krock. ^b Scopoli. ^c Linn. ^d Woodw. Mss.

^e Scop. and Krock. ^f Haller. ^g Hort. kew.

^h Scop. ⁱ Haller. ^k Hort. kew.

DENTARIA. See *Lathraea*, *Tozzia*, *Turritis*.

DENTARIAE AFFINIS. See *Hydrophyllum* and *Orobanche*.

DENTELLA. (So named by Forster from the segments of the corolla being finely toothed.)

Forster gen. 13. Juss. 200. Schreb. gen. n. 310.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Contortæ*. *Rubiaceæ* Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted, superior: segments subulate.

COR. one-petalled, funnel-form, longer than the calyx. Tube gradually widening into a five-cleft spreading border: segments acute, three-toothed, the middle toothlet more produced.

STAM. Filaments five, short, awl-shaped, inserted at the base of the tube. Anthers oblong.

PIST. Germ roundish, inferior, villose. Style cylindric, short, thickish. Stigmas two, thicker than the style, longer, spreading.

PER. Capsule globular, crowned by the calyx, two-celled.

SEEDS very many, ovate.

ESSENTIAL CHARACTER.

Cor. tubular five-cleft, with three-toothed segments.

Cal. five-parted. Stigmas two. Caps. globular, inferior, two-celled, many-seeded.

SPECIES.

1. *Dentella repens*.

Forst. gen. 26. fl. austral. n. 98.

Native of New Caledonia.

DENTELLARIA. See *Knoxia* and *Plumbago*.

DESCUREA. See *Sisymbrium*.

DEVIL IN A BUSH. See *Nigella*.

DEVIL'S-BIT. See *Scabiosa*.

DEVIL'S-GUTS. See *Cuscuta*.

DEUTZIA.

Thunb. nov. gen. 19. japon. 10. Juss. 431. Schreb. 776.

Class. 10. 3. Decandria Trigynia.

GENERIC CHARACTER.

CAL. Perianth one-leafed, somewhat bell-form, one-third of the length of the corolla, tomentose, five-cleft, seldom six-cleft: divisions ovate, obtuse, erect.

COR. five-petalled, seldom six-petalled. Petals inserted on the outside of the edge of the germ, oblong, obtuse, entire, white.

STAM. Filaments ten, placed without the edge of the germ, linear, filiform at the tip, below the tip emarginate, trifid, white, the length of the corolla, alternately somewhat shorter. Anthers globular, twin.

PIST. Germ superior, like a wreath, concave in the middle. Styles three, seldom four, filiform, a little longer than the corolla. Stigmas simple, club-shaped.

PER. Capsule globular, truncate, perforated, somewhat three-cornered, callous, scabrous, three-awned with the permanent bases of the pistils, three-valved, three-celled, seldom four-celled, the size of a pepper-corn, ash-coloured, gaping at the base.

SEEDS several in each cell.

ESSENTIAL CHARACTER.

Cal. one-leafed. Caps. three-celled. Filaments three-cusped.

SPECIES.

1. *Deutzia scabra*.

Lin. syst. 425. Thunb. jap. 185. t. 24. Kämpf. amoen. 5. 854.

DESCRIPTION, &c.

A tree about the height of a man, and very much branched. Branches alternate, round, even, purplish. Branchlets villose, scabrous, spreading. Leave opposite, petioled, ovate, acuminate, serrate, veined and wrinkled, scabrous with hairs in stars, spreading, an inch or more in length. Petiole villose and scabrous, a line in length. Flowers on the outer branchlets in compound panicles, on alternate pedicels. Peduncles and pedicels, angular, tomentose and scabrous.—It flowers in may and june.

Native of Japan, where the leaves are used by joiners in smoothing and polishing^l.

^l Thunberg.

DEW-BERRY. See *Rubus*.

DIALIUM.

Lin. gen. Reich. n. 23. Schreb. 29. Juss. 424.

Class. 2. 1. Diandria Monogynia.

GENERIC CHARACTER.

CAL. none.

COR. Petals five, equal, sessile, elliptic, obtuse, deciduous.

STAM. Filaments two, conic, very short, situated at the upper side of the receptacle. Anthers oblong, obtuse, as if of two conjoined.

PIST. Germ superior, ovate. Style subulate, declined, length of the stamens. Stigma simple, ascending towards the tip of the anthers.

PER. Legume?

SEED.

ESSENTIAL CHARACTER.

Cal. none. Cor. five-petalled. Stam. at the upper side of the receptacle.

SPECIES.

1. *Dialium indum*.

Lin. syst. 57. Reich. 1. 21. mant. 24. Rumph. amb. 3. 212. t. 37.

D. javanicum. Burm. ind. 12.

DESCRIPTION, &c.

A tree, with alternate, pinnate leaves, having seven ovate-oblong, acuminate, petioled, even leaflets, a hand in length. Flowers paniced, nodding.

Native of the East Indies*.

DIANELLA. See *Dracæna*.]

DIANTHERA. ($\Delta\iota\alpha$ & $\alpha\nu\theta\eta\rho\alpha$, double-anthered.)

Lin. gen. n. 28. Reich. 29. Schreb. 36. Gronov. 6. Juss. 104. Gært. 51.

Class. 2. 1. Diandria Monogynia.

Nat. order of *Personatæ*.—*Acanthi* Jussieu.

GENERIC CHARACTER.

CAL. Perianth one-leafed, five-parted, tubular: divisions lanceolate, equal, length of the tube, permanent.

COR. one-petalled, ringent. Tube short. Upper-lip flattish, reflex, cloven, very obtuse; lower-lip three-parted; divisions oblong, equal, obtuse, distant: the middle one wider.

STAM. Filaments two, filiform, shorter than the corolla, growing to the back of it, length of the upper-lip. Anthers on each filament double, oblong; the one a little higher.

PIST. Germ oblong. Style filiform, length of the stamens. Stigma obtuse.

PER. Capsule two-valved, two-celled, compressed above and below, but alternately, with boat-like valves, bursting asunder with an elastic nail.

SEEDS solitary, in form of a lens.

OBS. It differs from *Justicia* in the stamens.

ESSENTIAL CHARACTER.

Cor. ringent. Caps. two-celled, bursting with an elastic nail. Stam. each a pair of alternate anthers.

SPECIES.

1. *Dianthera americana*.

Lin. spec. 24. Reich. 1. 46. Gron. virg. 6. Pluk. alm. t. 423. f. 5.

Spikes solitary alternate.

[2. *Dianthera comata*.

Lin. spec. 24. syst. 63. Reich. 46. Brown. jam. 118. n. 2. Sloan. jam. 1. 160. t. 103. f. 2.

(*Antirrhinum*).

Justicia comata. Swartz obs. 14.

Spikes filiform verticilled, the lower umbelled.

3. *Dianthera japonica*.

Lin. syst. 64. Thunb. jap. 21. t. 4.

Peduncle axillary solitary sustaining from two to four flowers, bractes oblong ciliate.

4. *Dianthera cærulea*.

Forst. fl. austr. n. 14.

Umbel fascicled sessile quite simple.

5. *Dianthera clavata*.

Forst. fl. austr. n. 15.

Panicle subumbelled compound, peduncles dilated at the end.

* *Lin. mant.*

6. *Dianthera paniculata*.

Lour. cochinch. 26.

Panicles axillary, leaves lanceolate tomentose.

7. *Dianthera punctata*.

Vahl symb. 1. 4. Forst. descr. 9. n. 25.

Stem herbaceous, spikes terminating, leaves lanceolate-ovate acuminate, anthers awnless.

8. *Dianthera fulcata*.

Vahl symb. 1. 4.

Stem herbaceous grooved, leaves cordate-ovate, spikes terminating, lower anther awned.

9. *Dianthera flava*.

Vahl symb. 1. 5. Forst. descr. 9. n. 24.

Suffruticose, leaves elliptic-lanceolate, spikes terminating, lower anthers awned.

10. *Dianthera debilis*.

Vahl symb. 1. 5. Forst. descr. 9. n. 23.

Stem shrubby, spikes solitary imbricate axillary and terminating, bractes ovate ciliate.

11. *Dianthera violacea*.

Vahl symb. 1. 6.

Stem shrubby, spikes terminating imbricate, bractes lanceolate ciliate, flowers bicalyced.

12. *Dianthera bicalyculata*.

Vahl symb. 1. 6. Retz. æt. suec. 1775. p. 297. t. 9. & obs. 1. p. 10. n. 6. Forst. descr. 7. n. 19.

D. malabarica. Linn. suppl. 85. Gært. fruct. 1. 240.

Justicia malabarica. Ait. hort. kew. 1. 27.

Justicia ligulata. Lamarck encycl. n. 37.

Flowers paniced bicalyced, panicles dichotomous.

DESCRIPTIONS, &c.

This genus differs somewhat from *Justicia* in habit, station, time, &c. but in the essential characters of the fructification agrees with it entirely: and as to the two anthers on each stamen, which gave occasion to the distinction and the name, some species of *Justicia* have them. Hence Swartz would dismiss the genus *Dianthera* entirely, and unite the species to *Justicia*. Since Schreber however retains the genus, I have left it as Linneus gave it.]

1. This is a low herbaceous plant with a perennial root, which sends out several weak stalks about four inches long. The leaves are roundish, hairy, sessile, of a dark green colour, and an aromatic odour. The flowers are produced from the side of the stalks in small spikes, and are in shape and colour very like those of *Clinopodium*. They come out at the end of july, but rarely produce seeds in England.

[Stem very simple. Leaves linear. Peduncles alternate, the length of the leaves. Spikes ovate*.]

Native of Virginia, and other parts of North America, whence the seeds have been sent to England.

[2. Stem herbaceous, a foot high, somewhat branched and erect, angular, jointed, smooth; the joints swelling. Leaves subsessile, decussated, opposite, lanceolate, acute, attenuated at the base, smooth, nerved; on very short petioles. Peduncles axillary, filiform, terminated by filiform and umbelled spikes; flowers all directed one way, minute, pale blue. Bractes minute under the flowers. Segments of the calyx linear. Upper lip of the corolla half-vaulted; lower trifold spreading, with very minute bloody dots in two rows on the throat. Filaments under the vault of the throat: anthers two alternate, black. Germ ovate: style short: stigma simple bent in. Capsule ovate, attenuated at the base, containing four round, flattened seeds^b.

According to Browne, it rises generally to the height of two or three feet, and is plentifully furnished with slender subdivided branches near the top; seeds two in each cell.

Native of Jamaica, in the low lands: and there called *Balsam-herb*.

3. Root annual. Stem herbaceous, erect, six-cornered, very finely villose, kneeed, swelling above the

* *Linn. spec.*

^b *Swartz.*

knee, but little branched, a foot in height. Branches decussate. *Leaves* opposite, petioled, ovate-oblong, drawn to a point at the base, acuminate at the tip, entire, villose, spreading, unequal, from half an inch to two inches in length, the upper ones often larger. Petioles unguicular. *Peduncles* angular, villose, erect, half an inch in length: pedicels in whorls at the end of the peduncle, a line in length. *Bractes* of the pedicels two, opposite, subulate, spreading, villose on the outside, the length of the pedicel: floral bractes approximating to the flower, two, oblong, drawn to a point at both ends, concave, convolute, simply acute at the tip, ciliate, villose, one larger than the other, unguicular: calycine bractes four, within the others, lanceolate, subulate, ciliate, unequal, only half the length of the others, inclosing one, two, or three sessile flowers. *Calyx* divided almost to the base; the divisions subulate, erect, ciliate, a line in length. *Corolla* purple, a little longer than the bractes, with a curved, cylindric tube. *Filaments* longer than the tube. Anthers alternate at the end of each filament, membranaceous, and of a pale colour. *Germ* superior.—It differs from the Chinese *Dianthera*, which it resembles much, in having the flowers pedicelled, not subsessile; the peduncles longer and solitary in the axils, not aggregate; the bractes oblong and acute only, not ovate with a point almost like a spine; and the flowers from one axil only, not from both.—It differs from *Justicia sexangularis* in having oblong, not wedge-shaped bractes.

Native of Nagasaki in Japan: flowering in august^e.

4. Native of Botany island near New Caledonia.

5. Native of the Society islands^d.

6. This is a shrub, five feet in height, with an erect stalk, and brachiate branches. Leaves quite entire, opposite. Segments of the calyx filiform. Corolla white, with a long slender tube; the upper lip filiform and emarginate; the lower large and trifid. Anthers two on each filament, one over the other. Stigma acute.

Native of Cochinchina^e.

7. Stem erect, roundish, even, jointed: joints three inches long, narrowed at bottom: branchlets axillary, filiform, the length of the joints. Leaves opposite; those on the stem petioled, lanceolate-ovate, acuminate, scarcely crenate, smooth, simply veined with the veins mostly opposite, only half the length of the joints; those on the branchlets sessile. Spike at the top of the branchlets, peduncled, an inch long, smooth. Peduncle filiform. Flowers in whorls, two or three on each side, on very short pedicels, and small; the lower ones more remote. Bractes lanceolate, acuminate, a line in length. Calyx longer than the bracte, with awl-shaped segments. Corolla twice as long as the calyx, smooth on the outside, the throat dotted with violet.—It differs from the two next species, in having all the bractes shorter than the calyx, the calyx simple, the corolla white dotted with violet, and awnless anthers.

8. Stem erect, angular, six-grooved, pubescent, jointed, the internodes two or three inches long, and the joints swelling. Leaves opposite, obtuse, scarcely crenate, somewhat rugged along the nerves, a little villose, paler underneath, an inch and half long, with alternate veins: petioles the length of the leaves. Spike three inches long, subsessile. Flowers in whorls, sessile, three on each side, the lower ones more remote, the upper ones crowded, smaller than in the preceding. Bractes two under each whorl, lanceolate, villose towards the edge, the length of the flower: under each flower two others, linear, villose, shorter. Calyx double: the outer almost the length of the bractes, three-parted with awl-shaped segments; the inner only half the length of the outer, five-cleft, with lanceolate, ciliate segments. Corolla villose on the outside, white veined with purple; lower lip three-lobed, the

lobes oblong, obtuse, equal. Anthers purple, the lower ones with a white awn. It differs from the preceding in its six-grooved stalk, cordate-ovate obtuse leaves, petiole the length of the leaf, flowers in whorls, and corolla streaked with purple veins.

Native of Arabia Felix.

9. Stem shrubby, roundish, the thickness of a goose quill. Branches obscurely quadrangular, subpubescent, scored with a line along the sides; the internodes an inch long, the joints swelling. Leaves opposite, quite entire, thinly hairy, twice as long as the internodes, with alternate veins, on short petioles. Spike peduncled, two inches long, somewhat hairy; flowers opposite, solitary, contiguous. Bractes three under each flower, linear-lanceolate, blunt, villose underneath, one larger, the length of the flower. Calyx double: the outer deeply three-parted; segments linear,^f obtuse, villose, shorter by half than the bractes; the inner five-cleft, villose, a little shorter, with awl-shaped segments. Corolla villose on the outside, the length of the bractes; lower lip trifid, the lateral segments lanceolate, the middle one oblong, obtuse. Lower anther awned.

Forskall regarded these three as varieties of *D. americana*; but they differ in the form of the leaves, the terminating spikes, and in having the lower flowers remote, not all crowded together in a sort of head.

10. Stem shrubby. Branches obscurely quadrangular, four-grooved, with hairs pointing backwards, and internodes half an inch in length. Leaves opposite, lanceolate, narrowed at the base into a very short petiole, quite entire, bluntish, veinless, having four parallel villose nerves underneath, and being only half the length of the internodes. Spikes oblong, four-cornered, shorter than the leaf; the axillary ones alternate and sessile, the terminating one peduncled. Bractes in whorls, four together, sharpish, imbricate, villose along the nerves, two larger. Calyx simple, five-parted; segments linear-lanceolate, ciliate, shorter than the bractes. Corolla pubescent on the outside, a little longer than the bractes.

It differs from the next sort in having grooved branches hairy backwards, sessile leaves, four-cornered axillary spikes, ovate bractes in whorls, and a simple calyx.

11. Stem shrubby. Branches powdered and villose, obscurely quadrangular, the angles scarcely scored with a line, the internodes an inch and half long. Leaves opposite, the lower oblong, the upper lanceolate, rounded at the base, quite entire, smooth, bright green, veinless, nearly the length of the internodes, on short petioles. Spike cylindric, half an inch long, on a very short peduncle. Bractes imbricate, ending in a somewhat prickly point; the lowest nearly the length of the spike. Calyx double: the outer three-parted, with bristle-shaped segments; the inner five-cleft, with linear-subulate, smooth segments, shorter than the bractes. Corolla pubescent on the outside, longer than the bractes^g.

12. Stem herbaceous (according to the Supplement, shrubby, angular, rough with hairs.) Leaves opposite, ovate, acuminate, quite entire, petioled. Panicles axillary (terminating, *Suppl.*). Pedicels bifid, often trifid. Calyx double; outer deeply five-cleft, the dorsal segment lanceolate, almost the length of the corolla. Outmost bracte linear, double the length of the other. Corolla purple, bilabiate, divided. Anthers divaricated^h.

Native of the East Indies and Arabia Felix. It is annual, and flowers here in august. Introduced in 1785, by Sir Joseph Banks, Bart.^h

The proper place of all these is between the second and third speciesⁱ.

For other species reputed to be *Diantheræ* by some authors, see *Justicia*.]

^e Vahl.

^g Linn. suppl. and Hort. kew.

^h Hort. kew.

ⁱ Vahl.

^d Thunberg.

^e Forster.

^f Loureiro.

PROPAGATION AND CULTURE.

1. This plant is very difficult to preserve in this country, for although it is hardy enough to live here in the open air, yet it is very subject to rot in winter; and if it is placed under shelter, it is apt to draw up weak, and soon after to decay.

[The others, being natives of the East or West Indies and other hot countries, must be preserved in the bark stove: but few of them have hitherto been introduced among us.]

DIANTHUS. (Δίος ανθος, *Jove's-flower*, or *divine flower*; from the fine colour and odour in some species.)

Lin. gen. n. 565. Reich. 614. Schreb. 770.

Juss. 302. Gært. t. 129. Caryophyllus.

Tourn. 174. Tunica. Dill. elth. 298.

Class. 10. 2. Decandria Digynia.

Nat. order of Caryophyllei.

GENERIC CHARACTER.

CAL. Perianth cylindric, tubular, striated, permanent, five-toothed at the mouth, surrounded at the base with four scales, of which the two opposite are lower.

COR. Petals five; claws length of the calyx, narrow, inserted into the receptacle. Border flat: the plates outwardly wider, obtuse, crenate.

STAM. Filaments ten, subulate, length of the calyx, with spreading tips. Anthers oval-oblong, compressed, incumbent.

PIST. Germ oval. Styles two, subulate, longer than the stamens. Stigmas bent back, acuminate.

PER. Capsule cylindric, covered, one-celled, gaping open at top four ways.

SEEDS a great many, compressed, roundish. Receptacle free, four-cornered, shorter by half than the pericarp.

Obs. In some the styles scarce exceed the length of the stamens; in others they are very long, but rolled back in such a manner that the inflexion of the flower is not necessary.

ESSENTIAL CHARACTER.

Cal. cylindric, one-leaved; with four scales at the base. Petals five, with claws. Caps. cylindric, one-celled.

SPECIES.

* Flowers aggregate.

1. *Dianthus barbatus*. Bearded Pink, commonly called Sweet-William.

Lin. spec. 586. Reich. 2. 332. hort. cliff. 155.

ups. 165. With. 440. Sauv. monsp. 144.

Krock. files. n. 649. Mill. fig. t. 122. Curtis mag. t. 207.

Tunica barbata. Scop. carn. n. 502.

Caryophyllus barbatus hortensis latifolius. Baub. pin. 208.

Armeria rubra latifolia. Ger. 479. 3. emac. 598. 3. Park. parad. 319. n. 4—8. Raii hist. 991. 2.

Broad-leaved Sweet-William.

β. *C. barb.* hort. angustifolius. Baub. pin. 209.

Raii hist. 991. 3. Ger. 479. 4. emac. 598. 4.

Clus. hist. 1. 287. 1. Dod. pempt. 176. 2.

Narrow-leaved Sweet-William, or Sweet-Johns.

γ. *C. barb.*, fl. multiplici. Baub. pin. 208.

Double Sweet-William.

Flowers in bundles, calycine scales ovate-subulate equal to the tube in length; leaves lanceolate.

[2. *Dianthus carthusianorum*. Carthusian Pink.

Lin. spec. 586. Reich. 2. 332. hort. ups. 105. Pollich

pal. n. 409. Krock. files. n. 650. Allion. pedem.

n. 1544.

Tunica. Hall. helv. n. 899.—carthusianorum. Scop. carn. n. 504.

Caryophyllus sylvestris vulgaris latifolius. Baub. pin. 209.

C. arvensis, calyculo florum numerofo. Loefel. pruss. 37. f. 7.

C. montana 1. Tabern. 287.

Armeria alba. Ger. 478. Raii hist. 990.

Betonica coronaria, f. *C. sylv.* vulgatissimus. Baub. hist. 3. 334.

Flowers subaggregate; calycine scales ovate awned shorter than the tube, leaves linear three-nerved.

3. *Dianthus atrorubeus*.

Allion. pedem. n. 1545.

C. sylvestris, fl. rubro plurimo de summo caule prodeunte. Segu. veron. 434. t. 7. f. 2.

Flowers aggregate, calycine scales ovate awned shorter than the tube, leaves connate striated.]

4. *Dianthus ferrugineus*. Rusty Pink.

Lin. syst. 417. Reich. 2. 333. mant. 563. Mill.

fig. t. 81. f. 1. Barr. rar. 648. t. 497. (Caryophyllus).

Flowers aggregate, petals bifid, segments three-toothed.

5. *Dianthus Armeria*. Deptford Pink.

Lin. spec. 586. Reich. 2. 333. hort. cliff. 165.

fl. suec. n. 381. Hudf. angl. 183. With. 440.

Pollich pal. n. 410. Krock. files. n. 651. Hall.

helv. n. 900. (Tunica). Fl. dan. t. 230.

Caryophyllus barbatus. Seguier t. 7. f. 4.—sylvestris.

Baub. pin. 209. Mor. hist. 2. f. 5. t. 25. f. 20.—

minor annuus, fl. minore. Raii syn. 337. 4. Pet.

brit. t. 56. f. 5.

C. pratensis. Ger. emac. 594. 11. Park. theat. 1338. n. 2.

Armeria sylvestris altera, &c. Lob. ic. 1. 448. 2. Raii hist. 991. 4. (descr. good).

Viola barbata angustifolia. Baub. hist. 3. 335. 2. (good).

Flowers in bundles, calycine scales lanceolate villose equal to the tube in length.

6. *Dianthus japonicus*.

Lin. syst. 417. Thunb. jap. 183. t. 23.

Flowers in bundles, calycine scales acute ciliate shorter than the tube.

7. *Dianthus prolifer*. Proliferous Pink.

Lin. spec. 587. Reich. 2. 333. Hudf. angl. 184.

With. 441. Pollich pal. n. 411. Krock. files.

n. 652. Fl. dan. t. 221.

Tunica. Hall. helv. n. 901.—prolifera. Scop. carn. n. 503.

Caryophyllus sylvestris prolifer. Baub. pin. 209.

Segu. veron. 26. t. 7. f. 1. Park. theat. 1338. 1.

Raii syn. 337. Mor. hist. f. 5. t. 25. f. 21.

Armeria prolifera. Lob. ic. 1. 450. 1. Ger. emac. 599. 5. Raii hist. 990. 13.

Betonica coronaria squamosa sylvestris. Baub. hist. 3. 335. 1.

Viscaria. Ger. 481.

Flowers in heads, calycine scales ovate obtuse awnless exceeding the tube in length.

** Flowers solitary, several on the same stem.

8. *Dianthus diminutus*.

Lin. spec. 587. syst. 418. Reich. 2. 334. Leers

herborn. n. 322.

Caryophyllus sylv. prolifer, fl. singulari. Tournef. inst. 352. Dill. giff. 148.

C. prolifero affinis, &c. Baub. pin. 209. 7.

C. sylv. minimus. Tabern. hist. 290.

Calycine scales eight, longer than the flower.

9. *Dianthus Caryophyllus*. Clove Pink.

Lin. spec. 587. Reich. 2. 334. hort. cliff. 164.

ups. 104. mat. med. 117. Hudf. angl. 184.

With. 441. Engl. bot. t. 214. Plenck, ic. t. 347.

Lour. cochinch. 282.

α. *D. coronarius*. Lin. spec. α.

Car. hortensis simplex, fl. majore. Baub. pin.

208.

β. Car. altalis major. Baub. pin. 207.

C. hortensis. Park. parad. 306. Raii hist. 986.

Blackw. t. 85. Ger. 472. emac. 588.

γ. Car. maximus ruber & variegatus. Baub. pin. 209. Mill. fig. t. 121. Curt. magaz. 39.

Common Carnation.

δ. *D. imbricatus*. Lin. spec. δ. hort. cliff. 164.

ε. *D. inodorus*. Lin. spec. ε. Gært. fruct. 2. 227.

Tunica. Hall. helv. n. 896.—Caryophyllus. Scop.

carn. n. 507.

Car. sylv. biflorus. Baub. pin. 209. prodr. 104.

Segu. veron. 435. t. 7. f. 3.

Calycine scales subrhomboid very short, petals crenate, beardless.

[10. *Dianthus pomeridianus*.

Lin. spec. 1673. Reich. 2. 335.

Caryophyllus

- Caryophyllus fylv. & faxatilis, fl. magno lacteo subtus ad spadiceum vergente. *Tourn. cor.* 23.
Calycine scales ovate acute, very short, upper half of the calyx striated, petals emarginate almost entire.
11. *Dianthus deltoides*. Maiden Pink.
Lin. spec. 588. *Reich.* 2. 335. *hort. cliff.* 164. *fl. succ. n.* 382. *Huds. angl.* 184. *With.* 441. *Pollich pal. n.* 412. *Neck. gallob.* 195. *Krock. fles. n.* 653. *Fl. dan. t.* 577.
Caryophyllus minor repens. Raii hist. 988. *syn.* 335. *Dill. elth.* 402. *Park. parad.* 316. *n.* 5.
C. simplex supinus latifolius. Bauh. pin. 208. *Raii hist.* 990. *n.* 11.
C. sylvestris 7. *Clus. hist.* 1. 285. 1.
C. montanus purpureus. Ger. emac. 593. 6?
Betonica coronaria f. Car. minor fol. viridi nigricante repens, fl. argenteis punctis notato. Bauh. hist. 3. 329. *f.* 4.
β. D. glaucus. Lin. spec. 588. *Reich.* 2. 336. *hort. cliff.* 164. *ups.* 104. *Huds. angl.* 185. — *deltoides β. Dill. elth.* 400. *t.* 298. *f.* 384. (Tunica).
Calycine scales ovate-lanceolate acute, about two, petals crenate, leaves bluntish, subpubescent.
- [12. *Dianthus rupestris*.
Lin. syst. 418. *suppl.* 240.
Caryophyllus 1. *Clus. hist.* 1. 282.
Calycine scales two very obtuse, petals crenate.
13. *Dianthus cæsius*. Mountain Pink.
Engl. bot. t. 62. *Linn. trans.* 2. p. 302.
Dianthus glaucus. Huds. angl. 185. *With.* 443.
D. virginicus β. Lin. spec. 590.
Tunica. Dillen. hort. elth. 401. *t.* 298. *f.* 385.
Armeria species flore in summo caule singulari. Raii syn. 336.
Flowers subsolitary, calycine scales roundish short, petals crenate pubescent, leaves rugged at the edge.
14. *Dianthus albens*. Cape Pink.
Ait. hort. kew. 2. 90.
Calycine scales lanceolate four short, corollas emarginate.
15. *Dianthus chinensis*. China Pink.
Lin. spec. 588. *Reich.* 2. 336. *hort. cliff.* 164. *ups.* 104. *Curt. magaz.* 25. *Mill. fig. t.* 81. *f.* 2. *Lour. cochinch.* 282.
Calycine scales subulate patulous leafy equalling the tube, corollas crenate, leaves lanceolate.
- [16. *Dianthus monspeliacus*.
Lin. spec. 588. *Reich.* 2. 336. *amæn.* 4. 313.
Calycine scales subulate straight, a little shorter than the tube, corollas many-cleft, stem erect.
17. *Dianthus plumarius*. Feathered Pink.
Lin. spec. 589. *Reich.* 2. 336. *hort. ups.* 105. *cliff.* 174. *Krock. fles. n.* 654.
Tunica. Hall. helv. n. 897. — *plumaria. Scop. carn.* n. 505.
Caryophyllus sylvestris fl. laciniato, fine corniculis, odoro. Bauh. pin. 210. 5. *Raii hist.* 988. 4.
C. plumarius. Park. parad. 316. *n.* 2, 3. *Ger.* 474. 3, 4. *emac.* 591. 3, 4.
Calycine scales subovate very short, much blunted and awnless, corollas many-cleft.
- [18. *Dianthus crinitus*.
Smith in Linn. trans. 2. 300.
Caryophyllus orientalis, minimus tenuissime laciniatus, flore purpureo. Tournef. cor. 23.
Calycine scales oval mucronate subdiverging one-third of the length of the tube, petals many-cleft, beardless.
19. *Dianthus superbus*. Superb Pink.
Lin. spec. 589. *syst.* 418. *Reich.* 2. 337. *amæn.* 4. 272. *fl. lapp. n.* 170. *fl. succ. n.* 383. *Jacqu. obs.* 1. 40. *t.* 25. *Pollich pal. n.* 413. *Krock. fles. n.* 655. *Fl. dan. t.* 578. *Smith spicil.* 17. *t.* 19. *Curt. magaz.* t. 297.
Tunica. Hall. helv. n. 898. *Rupp. jen.* 2. 118.
Caryophyllus sylvestris alter, fl. laciniato odoratissimo. Bauh. pin. 210. 3. *Raii hist.* 989. 10.
C. fylv. 6. *Clus. hist.* 1. 284.
C. plumarius austriacus. Park. parad. 316. *n.* 4.
Flowers panicled, calycine scales very short acuminate, petals cloven into many capillary segments, stem erect.
20. *Dianthus attenuatus*.
Smith in Linn. trans. 2. 301.
Calycine scales short lanceolate acuminate about six, tube attenuated at the top, petals crenate.
- *** Stem one-flowered herbaceous.
21. *Dianthus arenarius*. Sand Pink.
Lin. spec. 589. *Reich.* 2. 337. *fl. succ. n.* 384. *Krock. fles. n.* 657?
Tunica arenaria. Scop. carn. n. 508?
Car. fylv. humilis, fl. unico. Bauh. pin. 209. *n.* 6?
C. fylv. 1. *Clus. hist.* 1. 282. *Dill. elth.* 402?
Stem bearing one or two flowers, calycine scales ovate obtuse, petals many-cleft, leaves linear.
22. *Dianthus alpinus*.
Lin. spec. 590. *syst.* 418. *Reich.* 2. 338. *Jacqu. austr.* 1. t. 52. *Krock. fles. n.* 656.
Caryophyllus pumilus latifolius. Bauh. pin. 209. *prodr.* 104. — & *C. fylv., fl. magno inodoro hirsuto. pin.* 209. *Raii hist.* 987. 3.
C. fylv. 2. *Clus. hist.* 1. 283. *f.* 1. (good).
Corollas crenate, outer calycine scales leafy almost equaling the tube.
23. *Dianthus virgineus*. Upright Pink.
Lin. spec. 590. *syst.* 418. *Reich.* 2. 338. *Jacqu. austr.* 5. *app. t.* 15. *Smith in Linn. trans.* 2. 297.
Tunica virginea. Scop. carn. n. 509.
Car. fylv. repens multiflorus. Bauh. pin. 209. *prodr.* 104. 2.
One flower or two on the stem, petals crenate, calycine scales very short and blunt in pairs.
- **** Shrubby.
- [24. *Dianthus arboreus*.
Lin. spec. 590. *syst.* 418. *Reich.* 2. 339.
C. arb. creticus. Bauh. pin. 208. *prodr.* 104. 1. *Raii hist.* 987.
Betonica coronaria arborea cretica. Bauh. hist. 3. 328.
Stem shrubby, leaves oblong somewhat fleshy, calycine scales numerous blunt closely imbricate very short.
25. *Dianthus fruticosus*.
Lin. spec. 591. *Reich.* 2. 339.
D. arboreus β. Smith in Linn. trans. 2. 303.
Caryophyllus græcus arboreus, leucoii fol. peramaro. Tournef. cor. 23. *itin.* 1. 183. *t.* 9. — 1. 219. *edit. oct.*
Stem shrubby, leaves lanceolate.
26. *Dianthus juniperinus*.
Smith in Linn. trans. 2. 303.
Caryophyllus creticus arboreus, juniperi folio. Tournef. cor. 23.
C. sylvestris arboreus. Alpin. exot. 39. *t.* 38.
Stem shrubby, leaves awl-shaped, calycine scales about four, obovate, mucronate and pungent, patulous, only half the length of the tube.
27. *Dianthus pungens*. Prickly-leaved Pink.
Lin. syst. 419. *Reich.* 2. 339. *mant.* 240.
Flowers solitary, stems few-flowered, calycine scales very short mucronate spreading, tube gibbous, petals entire.
28. *Dianthus hispanicus*.
D'Asso aragon. n. 371. *t.* 3.
Stem usually one-flowered, calycine scales ovate, petals linear quite entire.
29. *Dianthus Libanotis*.
Billard. ic. syr. 1. 14. *t.* 5.
Flowers subaggregate, calycine scales six acuminate recurved, corollas multifid-capillary bearded at the throat, stem erect.
30. *Dianthus pumilus*.
Vahl symb. 1. 32. *Forsk. arab.* 111. *n.* 284.
Stemless; leaves linear.

DESCRIPTIONS, &c.

These beautiful plants are chiefly herbaceous; some few however are suffruticose. Most of them are hardy, and perennial or biennial; some of the smaller wild sorts only are annual. Stalks annual, from one to three feet in height. Leaves opposite, narrow, entire. Flowers terminating, many

many aggregate, some solitary or several together but distinct.

There is much confusion in this genus from the incorrectness of authors. Dr. Smith observes, in his excellent paper on this genus, in the second volume of the Linnean Transactions, that the synonyms form the most inextricable botanical labyrinth he ever entered. I wish he may not find many other labyrinths yet more inextricable than this.

1. The Sweet-William has a perennial fusiform root. Stem upright, jointed, smooth, a foot and half high, branched. Leaves soft, veined, connate, from half an inch to almost an inch broad in the widest part, bright green. Bundles of flowers compact, umbelled, sessile. Petals ferrate, when wild red either plain or spotted with white, smaller than in many of the genus^a; the border the length of the calyx. Calycine scales, four, five, or six, ovate at the base, but putting out narrow stiff points, reaching almost as high as the calyx^b; hence this species is named *barbatus* or bearded.

The native country of this plant, so common in our gardens, was not known to Linneus; Dodonæus however, in 1552, mentions its being found wild in Germany, and Professor Hoffman confirms this in his Germanys Flora, 1791^c.

Scopoli, Allioni, and Krocker insert it in their floras; and Dr. Stokes sets it down as growing at King's-Weston near Bristol: but it is probably not originally wild.

This flower appears in the catalogue of Gerarde's garden, in 1596, and was probably cultivated much earlier, being esteemed (as Gerarde expresses it "for its beauty to deck up gardens, the bosoms of the beautiful, garlands and crowns for pleasure.")—Parkinson says that the narrow-leaved kinds are called Sweet-Johns, and the rest Sweet-Williams: that the broad-leaved unspotted kinds are named in some places Tolmeiners and London Tufts, and that the speckled kind is termed London Pride.

The variations of colour are numerous, and might have been more so if this species had attracted the same minute attention as the florists have given to the Pink and Carnation. The principal varieties are the following:

1. Broad-leaved, or Sweet-Williams.
2. Narrow-leaved, or Sweet-Johns.

Each of these have the flowers

1. Single, and
2. Double.

The principal variations of colour are

1. Deep red.
2. Pale red. Rose-coloured. Flesh-coloured.
3. Purple, inclining to blue.
4. Purple and white.
5. White spotted.
6. Red, with white borders: figured by Miller. And, Purple with white borders: figured by Curtis, as the Painted Lady.
7. Pure White.

With all the intermediate shades of the above colours, both single and double.]

The broad-leaved, with very double flowers of a deep purple, inclining to blue, bursting the calyx, is not so much esteemed. The double Rose Sweet-William, with flowers of a fine deep rose-colour, and smelling sweet, is much valued; for it does not burst. The Mule, or Fairchild's Sweet-William, is one of the narrow-leaved sorts. It is supposed to have been produced from seeds of a Carnation impregnated by a Sweet-William. The flowers are of a brighter red than either of the former; their bunches are not quite so large, but the flowers have an agreeable odour.

[2. This differs from the foregoing sort, in having the leaves narrower by half; stiffer, and marked with three principal nerves, not one only, as in that. The stem is a little scabrous, not perfectly smooth, as in the former. The petals are distant,

and villose, not smooth, on their upper surface. The pistils are longer than the tube^d.

Krocker adds other differences: that the leaves are glaucous and connate; the stem higher; the bundles of flowers smaller and less close, especially in the wild plants; the calycine scales broader; petals ferrate, purple, with sharp auricles; calyx ample, viscid, pale brown or dark purple, with a green base; anthers violet-coloured; seeds compressed, roundish, with a black membranaceous edge.

In a fertile soil there will be fifteen flowers on a stem, in a barren soil fewer, and sometimes only one; this therefore is an intermediate species between the aggregate and one-flowered *Dianthi*.—There are sometimes seven calycine scales. The petals are of a deep red colour, ovate, and five-toothed^e.

Pollich could not observe any toothlets at the throat, which Krocker (from Haller) calls the auricles.

There are two pairs of scales to the calyx (according to Allioni): a crown of black dots is at the origin of the claws in the petals, and at the same place are a few white hairs. Flowers terminating, on two branches, from four to six. Perennial.

Native of Germany, Switzerland, Carniola, Italy, Sicily, Spain. Haller says it is very common about Aigle; and I gathered it in flower on the 28th of april 1779, at Chatelaine near Geneva. With us it does not flower till july.

According to the Kew catalogue, it was introduced in 1771, by Mons. Richard.

3. Height from two to three feet. Leaves smooth, flat, connate at the base, an inch from the joint, striated underneath, lanceolate, erect. The head of flowers at the end of the stem is formed in this manner: a pair of elliptic leaves emitting a long awn has two short peduncles rising from it on each side; hence the stem rising a little higher, has three other very short peduncles, each bearing three flowers. Similar bractes contain the calycine scales, which are four in number, transparent, reddish white, ending in a short brown awn. Calyx brown, very closely striated. Petals scarlet, rhomb-shaped, with few unequal teeth; there are usually two on each side, and at the end two or three short ones; on the upper surface are a few erect black hairs. The flower has hardly any smell. The plant is perennial.—Native of Piedmont, in dry hilly places, by the sides of woods^f.

This, which is given as a variety of the foregoing species by Linneus, is certainly distinct, in Allioni's opinion.

4. This sort resembles the foregoing very much, but the stem is narrower, and the leaves are more grassy and more keeled; the flowers are bundled in like manner as that is with the common calyx scarious: it differs, however, in having the calycine scales with the awns the length of the corolla, which in the last species are shorter; also in having the petals bifid, with three teeth on each side, rufous underneath, and yellowish within; the border shorter than the calyx: whereas the petals of the Carthusian Pink are not emarginate or bifid, but rounded, toothed, and bright purple on both sides^g.

It has the entire habit of Sweet-William; the flower-stems are upright, and about a foot and half high; the leaves are somewhat like those of Carnation, but of a darker green; the bundles of flowers are close; some of the corollas are yellow, and others of a rusty iron colour in different bundles, and sometimes even in the same bundle. The season of flowering is in july, but when the weather proves cool and moist, there will be a succession of flowers till the end of september. The roots will abide two or three years, but the young plants of.

^d Linn. spec.

^e Scopoli.

^f Allioni.

^g Linn. mant.

^a Krocker.

^b Scopoli.

^c Curtis.

the second year produce the greatest quantity of flowers. This species was discovered by Barrelier in the mountains of Abruzzo in Italy; and it has been since discovered in Spain, whence Mr. Miller received the seeds, which have succeeded in the Chelsea garden^b. (1756).

5. Root annual. (biennial. *Ray hist.*) Stems erect, a foot or a foot and half in height, round, pubescent, roughish, swelling at the joints, towards the upper part a branch comes forth at each joint, terminated with a small bundle of from two to four flowers. Leaves linear-lanceolate, connate, bright green, erect, entire, pubescent on both sides and roughish, three-nerved, three inches long, and two lines broad. Each flower has two or four bractes, or calycine scales, which are subulate, striated, and hirsute. Calyxes longer and narrower than in the Carthusian Pink, striated and villose. Claws of the petals long; border purple, dotted with red and white, smooth, except that they are slightly hairy towards the throat, obtuse, and finely notched at the end, (acuminate, with one or two teeth. *Lin. spec.*) a line and half in breadth, and nine lines or more in length, including the claws. Anthers violet-coloured. Stigmas red-purple, flexuose, pubescent^c.—It flowers in July and August.—Native of Gothland, Denmark, Upper and Lower Silesia, the Palatinate, and other parts of Germany, France, Switzerland, Italy, Spain, and England. From having been found in a meadow near Deptford by Johnson, it obtained the name of *Deptford Pink*; it occurs in Charlton wood, and other places in Kent; near Croydon, between Dorking and Mickleham, Dulwich, Oak of Honourhill, Streatham, &c. in Surrey; in Norfolk; about Perthore and Eckington in Worcestershire; near Ketley in Shropshire; and at Clarkton Leap, near Worcester. Near Reading in Berkshire. Near Caversham. By the road from Harefield to Chalfont, St. Peter's. In a little wood near Highgate, and in Tuddington field.

6. Stem decumbent at the base, then erect, round, even, smooth, simple, or very rarely divided at top, a foot in height. Leaves opposite, petioled, ovate, acute, entire, smooth, nerveless, erect, an inch in length, the upper ones smaller. Petioles broad, stem-clasping. Flowers terminating, fastigate. Calyx the length of the tube of the corolla, striated, smooth: calycle ovate at the base, then lanceolate, acuminate, keeled, half the length of the calyx. Corolla crenate.—Native of Japan^d.

7. Root annual. Stem usually single, erect, decumbent only at bottom, very smooth, swelling at the joints, a span or a foot high; sometimes more. A pair of awl-shaped leaves at each joint, connate, quite entire, bright green, smooth. Flowers in a crowded head on the summit of the stalks, three or four together, surrounded by large scaly bractes nearly hiding them; they open one at a time, the uppermost first, rising up from the bractes; when they fade, drying up and withdrawing again, so that they are a considerable time in flowering. Corollas small, slightly bifid, not crenate, red or rose-coloured, sometimes varying to white; they expand about eight in the morning, and close about one in the afternoon^e.

Native of Denmark, Germany, France, Switzerland, Carniola, Italy, Sicily, Spain, England. With us it is rare, in sandy pastures, and has been observed only at Selfey Island in Suffex, near Norwich, on Landridge hill, and at Hanley castle; in Worcestershire.—Between Hampton Court and Tuddington. *Merret*.—It flowers in July and August; and is known by the name of Childing Sweet Williams, or Childing Pink.—Gerarde calls it Catchfly or Lime-wort: but he has confounded it with the true Catchfly.

8. It is doubtful whether this be a distinct species. Haller thinks it is not; Leers says it is hardly

^b Mill. fig.

^c Haller, Pollich, Krocken.

^d Thunberg.

^e Woodw. Mss. Withering, Haller, Pollich.

different; and Linneus affirms it to be the daughter of the Childing Pink, and of course very nearly allied to it. All the specimens that Dr. Smith has ever seen were evidently *D. prolifer*: there is little doubt, therefore, but that it is no more than a variety of that species.—The leaves are narrower; the stem is branched; the flowers solitary, not aggregate. The calyx has four pairs of scales, the inner ones gradually larger, and more obtuse. The corolla very short, scarcely prominent beyond the tube^m. Annual.]

It is a very diminutive plant, seldom rising six inches high, terminated by a single flower, of a pale red colour; the leaves are short and narrow, and grow in close heads. [Native of Germany and Switzerland.

9. This species, so well known in its improved state, in gardens, is thus described in its natural state, by Haller.—Root large, woody, branched. Stem a foot or eighteen inches high, decumbent at bottom, jointed, branched. Leaves glaucous, smooth, linear, a line in breadth. Every branch is terminated by one, two, or three flowers. The calycine scales are short, broad and awned; but sometimes they are wholly wanting. The petals have long claws, the lamina or border represents the sector of a circle, and is finely ferrated about the edge; it is not lanuginous at the base: the claw is green, the border is rose-coloured. This flower has a pleasant smell, but not the spicy odour of the garden plant. Seguier says that it is without smell. Scopoli adds that the stem is angular, and that the leaves, when viewed through a magnifying glass, appears finely toothed.

It grows on rocks and walls, and in dry soils.

This fine flower, which has long been deservedly esteemed, both for its superior beauty, and rich spicy odour, must have been unknown to the ancients, in its cultivated improvement; otherwise it must have been described by the naturalists, and sung by the poets, as well as its rival the rose. Carnations and Pinks have, however, been cultivated time immemorial in Europe, and were among the few favourite flowers of our remote ancestors.

CARNATIONS.

Parkinson, in his *Paradisus*, published in 1629, has given a very full account, with figures, of the Carnations then in cultivation. He divides them into Carnations, or the greatest sorts in leaf and flower, and Gilloflowers, or such as are smaller in both respects. The orange-tawney or yellow Gilloflower, now little esteemed, had then been lately introduced. Gerarde (1597) informs us, “that a worshipful merchant of London, Master Nicholas Lete, procured it, from Poland, and gave him thereof for his garden, which before that time was never seen nor heard of in these countries.”

Of Carnations, the diligent Parkinson recites nineteen, and of Gilloflowers thirty varieties. Though these have been supplanted by modern flowers, and the florists are daily producing new ones, yet it may not be unacceptable to the curious, to recite the names of those which were in favour almost two centuries ago.

CARNATIONS. Gray, red and blue Hulo. Grimelo or Prince. White or delicate. French. Grand, or great Harwich, or old English. Chryshall or Chrystalline. Red Chryshall. Fragrant. Striped Savadge; bluish, and red Savadge. Oxford. King's or ordinary Bristow. Greatest Granado. Gran Pere. Camberfine. Great Lombard Red.

GILLOFLOWERS. Lusty Gallant or Westminster. Bristol blue. Bristol bluish. Red Dover. Light or White Dover. Fair maid of Kent, or ruffling Robin. Queen's. Dainty. Brasil. Granado. Turkey. Poole. Light or pale Pageant. Sad Pageant. Bradshaw's dainty Lady. Best White. London White. Stamell. Purple. Gredeline. Blue. Bluish. John Wittie his great tawny. Divers other Tawnies. Many sorts of Blushes. Some varieties of reds. Striped Tawny.

^m Linn. spec.

Marbled Tawny. Master Tuggie's Princess. Flaked, feathered, and speckled Tawny. Master Tuggie his Rose Gilloflower.

This Master Tuggie was the most famous man of his time for the cultivation of these fine flowers: and accordingly Johnson (Ger. herb. edit. 1636. p. 589) after referring to the work of his friend Mr. John Parkinson, adds, "if they require further satisfaction, let them at the time of the year repair to the garden of Mistress Tuggy, the wife of my late deceased friend Mr. Ralph Tuggy, in Westminster, which in the excellency and variety of these delights exceedeth all that I have seen."

Gerarde has several names besides Clove-Gilloflowers and Carnations:—as Sops in wine, Pagiant or Pagon colour, Horse-flesh, Blunket, &c. expressive of the different colours.—The old name *Gilloflower*, was supposed by Parkinson to be corrupted from July-flower, and Ray has adopted the notion; but it is erroneous: for it is evidently derived from the French *Giroflée* or *Girofler*, and accordingly Chaucer writes it *Girofler*.

Many of the fine varieties of Carnation esteemed in former times are figured in Parkinson's *Paradisus*, *Hortus Eystettensis*, *De Bry's Florilegium*, *Passæi Hortus Floridus*, *Swertii Florilegium*, &c. And some of the modern ones, by Mr. Sowerby, in his *Flora Luxurians*. Rea (in his *Flora*, 1702.) has a list of 360 good sorts of Carnation.]

Modern Florists distinguish the Carnation into four classes.

First *Flakes*, of two colours only, and their stripes large, going quite through the leaves. One of these, the Rose-leaved Flake, is figured by Miller, t. 121.

Second *Bizarrs*; with flowers striped or variegated with three or four different colours, in irregular spots and stripes. See Curtis's magazine, t. 39.

Third *Piquettes* or *Piquettées*; having a white ground, and spotted or pounced with scarlet, red, purple, or other colours.

Fourth *Painted Ladies*; these have the petals of a red or purple colour on the upper side, and are white underneath.

Of each class there are numerous varieties, but chiefly of the third, which some years ago was in most esteem with florists; but of late years the Flakes have been in greater request. To enumerate the varieties would be needless, since they are not permanent, and every country produces new flowers almost every year, which though at first raising they may be greatly valued, in two or three years become so common as to be of little worth, especially if they are defective in any one property; and are turned out to make room for new comers. For the variety of pompous names we refer therefore to the lists published yearly by florists and nursery-men, who either raise these flowers from seed, or import them from abroad.

The following are what the florists call the good properties of a Carnation.

1. The stem of the flower should be strong, and able to support the weight of the flower without hanging down.
2. The petals should be long, broad and stiff, and pretty easy to expand; or, as the florists term it, should make free flowers.
3. The middle of the flower should not advance too high above the other parts.
4. The colours should be bright, and equally marked all over the flower.
5. The flower should be very full of petals, so as to render it, when blown, very thick in the middle, and the outside perfectly round.

[To this we may add, that the stem should not only be strong, but straight, and not less than thirty, or more than forty-five inches high. The flower should be at least three inches in diameter, and the petals well formed, neither so many as to appear crowded, nor so few as to appear thin. The lower or outer circle of petals, commonly called the guard leaves, should be particularly substantial; they

should rise perpendicularly about half an inch above the calyx, and then turn off gracefully in a horizontal direction, supporting the interior petals; which should decrease gradually in size, as they approach the centre, which should be well filled with them. All the petals should be regularly disposed, and lie over each other in such a manner as that their respective and united beauties may meet the eye all together; they should be nearly flat, or at most have a small degree of inflection at the broad end: their edges should be perfectly entire, without notch, fringe, or indenture. The calyx should be at least an inch in length, sufficiently strong at top to keep the bases of the petals in a close and circular body. The colours should be distinct, and the stripes regular, narrowing gradually to the claw of the petal, and there ending in a fine point. Almost one half of each petal should be of a clear white, free from spots.

PINKS.

Pinks do not seem to have attracted any great notice among our ancestors. Parkinson has given very few varieties: as white, red, purple, Granado, matted and blush, both single and double. Rea says, that there are many sorts, but of little esteem, serving only for the sides of borders in spacious gardens, and some of them for Posies, mixed with the buds of the Damask Rose; and that the best are the feathered Pinks. It is only within the present century, and particularly of late years, that Pinks have been much improved and varied, so as to be greatly valued among florists.]

The principal varieties are, the Damask, white Shock, Pheasant Eye, common Red, Cob's, Dobson's, white Cob, and Bat's. The old man's Head, and Painted Lady Pinks rather belong to the Carnation.

The Damask Pink is the first of the double sorts in flower. This has but a short stalk; the flower is not very large, and not so double as many others; the colour is of a pale purple, inclining to red, but it is very sweet.

The next which flowers is the white Shock, which was called from the whiteness of its flowers, and the borders of the petals being much jagged and fringed, the scent of this is not so agreeable as of some others.

Then come all the different varieties of Pheasants Eye, of which there are frequently new varieties raised, which are either titled from the persons who raised them, or the place where they were raised; some of these have very large double flowers, but those which burst their pods are not so generally esteemed.

The Cob Pink comes after these to flower; the stalks of this are much taller than those of any of the former; the flowers are very double, and of a bright red colour; this having the most agreeable odour of all the sorts, merits a place in every good garden. The time of the Pinks flowering is from the latter end of May to the middle of July, and frequently that sort of Pheasant Eye which is called Bat's Pink, will flower again in autumn.

The old Man's Head Pink, and the painted Lady, do not flower till July, coming at the same season with the Carnation, to which they are more nearly allied than to the Pink. The first, when it is in its proper colours, is purple and white striped and spotted, but this frequently is of one plain colour, which is purple; this sort will continue flowering till the frost in autumn puts a stop to it, and the flower having an agreeable scent, renders it valuable. The painted Lady is chiefly admired for the liveliness of its colour; for it is not so sweet, or of so long continuance as the other.

[Pinks are here kept along with Carnations, but they do not seem to be all varieties of the same species: probably the Red Pinks take their rise from this, whilst the Pheasant Eye Pinks seem to derive their origin from *D. plumarius*. Some give them all as variations of *D. deltoides*, which is not likely.

10. The herb of this sort is very like that of *D. Caryophyllus*. But it scarcely multiplies itself by the root. The stem has only three or four simple, long, one-flowered branches. The calyx has only two, short, acute, not acuminate scales. The corolla is yellow, and underneath pale green: the petals are revolute on the sides, hence they are convex, not spread out flat, but distant, shorter than the tube of the calyx, very obtuse, slightly emarginate, scored with a line. Stamens white, the length of the calyx. Pistils finally becoming of the length of the corolla. The flower opens at half after twelve at noon, and closes at ten o'clock at night. —Observed near Constantinople by Forskaehl, and in Palestine by Hasselquist^a. Dr. Smith remarks, that this is the only sort he has seen, which has the calyx smooth in the lower part, while the upper half is striated, and that very strongly and accurately.

11. Barren stems numerous, reclining, putting forth roots, flowering stems six to eight inches high, columnar below, square at top, slender, weak, but usually erect, sometimes simple, sometimes branched or dichotomous, swollen at the joints, slightly pubescent. Leaves in pairs at each joint, linear or subulate, nearly the length of the internode, converging to the stalk, and embracing it at the base, slightly pubescent; those of the barren branches narrower. Peduncles round, downy, from the ends of the stem and branches, single, or two from the same joint, each bearing one flower. Petals toothed at the edge, bright red above, pale beneath. According to Ray reddish, with a ring of deeper-coloured dots surrounding the eye—with dark purplish teeth near the throat, and beset with white silvery points, with hairs proceeding from them, as Pollich has it^b. The petals vary much in colour, being sometimes of a very pale flesh colour, sometimes deep red, but they are always marked with a ring of deeper red dots near the centre of the flower^c.

Dillenius distinguishes this by the scales of the calyx being much more pointed; the corolla of a deeper colour, with numerous silvery dots, and its flowering later, namely in June and July. It continues flowering till late in autumn.

Pastures and heaths, on a light soil, in Sweden, Denmark, Germany, Spain; in England not uncommon, as on Hampstead heath, Dupper's-hill near Croydon, about Hampton Court Park, Beacons-hill near Faversham in Kent, not far from Slough near Windsor. In Bedfordshire near Sandy; Cambridgeshire, Suffolk, Norfolk, at Cley, near Hillborough in the way from Brandon, &c. Nottinghamshire, Derbyshire, Westmoreland, Shropshire, Somersetshire; and King's Park, Edinburgh.

There is a variety common in gardens; which has white flowers, with a beautiful purple ring, and leaves rather more glaucous than in the common sort. This is the true *D. glaucus* of Linneus, and perhaps of Lightfoot. It has, indeed, generally four scales to the calyx, but so has *D. deltoides* frequently^d.

12. Leaves linear, very narrow, three-sided, channelled, stiffish, connate, in tufts, scabrous on the edge and keel. Stem filiform, prostrate, bearing one or two flowers, which are remote and sweet-scented. Calycine scales orbiculate, pressed close. Petals blood-red, crenate, not feathered or villose. Styles standing out, recurved. Perennial.—Native of mountains in the South of Europe^e. This is the same with *D. virgineus*. n. 21^f.

13. The circle is purple, and there is a purple tinge on the upper surface from a number of very fine lines. Stem rather angular; that and the leaves covered with a microscopical woollyness. Peduncles solitary, or in pairs. Calycine scales in two opposite pairs, skinny at the edges, the two inner ones

largest. Teeth of the calyx skinny at the edges, and pointed. Petals stained with pink at the base of the lamina. According to Dillenius, there is a purple circle on the corolla, and the petals have a purple tinge from a number of very fine lines on the upper surface. Willich says, that the circle or ring is double, the inner pale, the outer broader and scarlet, both toothed. Anthers gray. Stigmas white, woolly. Receptacle nearly as long as the seed-vessel^g. The flowers have no scent.

Dr. Smith, to whom we are much obliged for elucidating this genus, describes it thus. Root woody. Stalks several, a span high, erect, simple, smooth, quadrangular, having two or three pairs of leaves on them, one-flowered, scarcely ever two-flowered. Leaves linear-lanceolate, bluntish, glaucous. Scales of the calyx only one third of the length of the tube, ovate-roundish, bluntly mucronate, striated. Petals flesh-coloured, with a double row of blunt notches, marked with lines, and bearded at the base^h.

Native of Switzerland and England. On Cheddar rocks in Somersetshire.

14. Petals white above, greenish white underneath, with the tip violet-coloured on both sides. This differs from the foregoing, in having the petals scarcely crenate, and in not having the purple circle on them.—It is a native of the Cape of Good Hope, where it was observed by Mr. Francis Masson; introduced 1787. It is perennial, and flowers in Augustⁱ.]

15. The flower stems of the *China Pink* are from six to eight or nine inches high, branching out on every side; the branches grow erect, and are terminated each by one flower. The flowers have no scent, but having a great variety of colours, they are a considerable ornament to the flower-garden from July until autumn frosts put a stop to them. They have been greatly improved by culture; some flowers being as full of petals as the best double Pinks, and displaying the most glowing and vivid red colours.

This species is a native of China, whence the seeds were sent by the French missionaries to Paris, about the year 1705. The flowers which were for many years produced in the European gardens were single, till about the year 1719, when many double flowers were produced in some of the gardens at Paris; but whether these arose from seeds of the single sort, or from new seeds obtained from China, is difficult to determine; the first time I saw plants with double flowers in any of the English gardens was in the year 1722. The roots will often last two years in a dry soil; but they are generally raised from seeds every year^j.

[In the nursery-grounds, it is generally known by the name of *Indian Pink*. Dr. Smith mentions his having a plant from Mr. Sikes's garden at Hackney, which seems to be a mule between this species and *D. barbatus* or Sweet William.

16. Wild about Montpellier and Verona, and in Piedmont. Perennial.

17. Stems ascending, a foot or eighteen inches in height, branched. Leaves of a grayish or glaucous hue, a line and half wide, very sharp at the end. Flowers one, two, seldom three, at the ends of the branches; sweet-scented. Calyx glaucous-green, longer than in the other species. Petals large, light red or bright purple; sometimes white, with a circle of red; deeply jagged, having a red down at the base of the lamina or border: anthers red. Capsule shorter in proportion than in the other species^k.

It flowers from June to August, and is perennial.

Native of Europe and North America, on rocks, mountain pastures, and dry woody places. Cultivated in 1629^l.

18. Stalks a span high, smooth and even. Leaves linear, very narrow and short, bluntish, smooth and

^a Linn. spec.

^b Ray, Pollich, Withering, Woodw. Mss.

^c Engl. bot.

^d Ibid.

^e Linn. suppl.

^f Smith in Linn. trans. 2. p. 295.

^g Withering and Stokes.

^h Linn. trans. 2. 302.

ⁱ Hort. kew.

^j Mill. fig.

^k Krock, Scop. Haller.

^l Park. parad.

even. Flowers two or four on a stalk, erect. Tube of the calyx slender, striated, with lanceolate, straight, very sharp teeth, with four scales at the base, exactly oval, striated on the back, with a short spreading dagger-point. Petals narrow, irregularly cut to the very base into very fine segments. It varies with a white flower. Found in Armenia by Tournefort^b.

19. The stem is a foot or eighteen inches in height, procumbent at the base, and then erect, round, somewhat two-edged on the upper part, smooth, branching only at top. Leaves like those of narrow-leaved Sweet-William, connate, lanceolate-linear or linear-subulate, acute, quite entire, bright green, smooth, marked with lines and a rising nerve, rough on the edge, green not glaucous. Flowers erect, usually two terminating each branch, on short peduncles; sometimes there are more, and sometimes there is only one. Calyx slender, striated, with erect lanceolate sharp teeth. Calycine scales four, sometimes more, obovate, pointed, striated, one third the length of the calyx. Petals pale red, sometimes white, hairy at the base of the border, sprinkled with bloody spots. The flowers smell very sweet, especially in the evening. Capsule cylindrical, a little longer than the calyx, glittering like gold dust, smooth, four-parted^c. According to some it is perennial, according to others biennial, and even annual. Mr. Miller says that the roots will live three or four years, but that the flowers are in their greatest beauty the second year from seeds. It is probably therefore biennial naturally.

Native of Denmark, Lapland, Germany, Switzerland, France, Italy, Spain: flowering from July to September. I gathered it in flower in August 1779, on mount Scheidegg, in going from the vale of Hasli to that of Grindelwald, in Switzerland. Dr. Smith observed it near Geneva.

20. Stalks diffused, woody at bottom, twisted, branching very much; flowering branches ascending, a foot long, leafy, round, smooth, divided at top into two or three branches, which are one-flowered. Leaves awl-shaped, mucronate and pungent, glaucous, rugged on the edge; stem-leaves shorter than the internodes. Flowers flesh-coloured, void of scent. Calycine scales six, the inner ones often membranaceous about the edge. Tube of the calyx striated, gradually narrowing towards the top; teeth erect, membranaceous about the edge. Corolla small, crenate, beardless.

Native of the South of France, near the coast. Observed by Broussonet^d.

21. That this bears a great affinity to *D. plumarius*, is clear from the throat of the petals; which are more oblong, divided, and cut beyond the middle of the disk, (whereas in that they are only multifid) at the base is a sharp, livid spot, with purplish hairs scattered over it^e.

Stem a finger or span in length, erect, round, almost naked, having only one pair of leaves on it, and sustaining one flower. Root-leaves abundant, in bundles, smooth, narrow, obtuse, stiffish. Petals white, not crenate, resembling those of *D. plumarius*, and smelling very sweet, especially in the evening^f.

According to Scopoli, the leaves are tooth-letted; and the four calycine scales lanceolate, two of them longer than the lamina of the petal.

Mr. Miller says that the flower is sweet, but pale-coloured and small.

Native of Scania, in drifting sand. Silesia, on the borders of Saxony^g. In Carniola, on mountains^h; in Piedmontⁱ. On old walls and buildings in many parts of England^k. The only certain authority, however, on which this species rests, is that of Linneus. That which occurs on old walls in

England seems to be the common Pink of the gardens, *D. Caryophyllus*^l.

It flowers in May and June.

22. Root woody, perennial, putting forth many stems of a finger's length, having three joints. Leaves on the stem linear, bluntish, flat; root-leaves in tufts, linear-lanceolate. Inner calycine scales only half the length of the outer ones. Corolla large; petals the length of the calyx, round, with numerous very short teeth, and the throat a little villose^m. The leaves are sometimes obtuse, sometimes acuteⁿ.

Native of the Alps; Silesia, Austria, Stiria, Siberia, in rough, stony places; flowering in June and July.

23. Root perennial. Lower leaves copious, erect, in an imbricate tuft, acuminate, like those of Thrift. Stems few, a span in height, having four very simple joints, with smaller leaves, the uppermost very small, arising from a perfoliate sheath. Calycine scales broad, ovate, acute; the two pairs remote. Border of the corolla shorter by half than the tube of the calyx, and rounded. Only one flower usually on the stem; but sometimes a second from the upper axil^o.—Leaves short, narrow, toothletted. Petals emarginate, crenate^p. Stems decumbent, not prostrate; there are several flowers on a stem, it should be removed therefore to the third section; the flowers are inodorous.

Native of the Alps; the South of France, Austria, Carniola, &c. Dr. Smith gathered it on the limestone rocks opposite the post-house on mount Cenis, in August 1787^q. It flowers in June and July.

Cultivated in 1732, by James Sherard, M.D.^r. Mr. Miller seems to confound it with *D. deltoides*.

24. Stalks eighteen inches and more in height, white, round, smooth, jointed, woody, branched. Leaves glaucous, an inch and half long, narrow, rigid, mucronate. Calyx echinate. Petals pale purple, striated, a little beyond the middle marked with a dark red dotted line, forming a ring, below which they are lanuginous; they are cut about the edge^s. Native of the island of Candia.

25. Stem twisted, two feet high, woody, brittle, hard, covered with a dark, cloven bark. Leaves an inch long, and three or four lines broad, obtuse, fleshy, brittle, bitter as gall, growing in tufts. Flowers commonly solitary, but sometimes several together. Petals an inch and half long. Native of the island of Seriphos in the Levant^t.

It is only a variety of the preceding, with shorter leaves a little broader, and blunt at the end^u.

26. Stem shrubby, with a lacerated chinky bark, very much branched, the small branches with close tufts of leaves at the ends: flowering-branches elongated, round and smooth, with two or three pairs of leaves only, much shorter than the internodes. Leaves very narrow, mucronate-pungent, channelled, with a smooth even edge. Flowers two or three at the tops of the branchlets, pedicelled, small. Calycine scales blunt, scarcely striated, membranaceous round the edge, and at the top; tube striated, with sharp teeth, and not membranaceous about the edge. Petals crenate and gashed. Styles capillary, standing out.

Native of the island of Candia, where it was observed by Tournefort^x.

27. The stems are full of alternate branches. The stem-leaves are connate and sheathing at the base, crowded, and covering the branches with their sheaths: the leaves on the branches are slightly connected with distant sheaths: all are flattish, acuminate, and somewhat prickly. The peduncles arise from the ends of the lateral branchlets; the pedicels sustain from one to three flowers. Calycine

^b Smith in Linn. transf. 2. 300. ^c Hüller, Pollich, Krock. Smith spic.
^d Smith in Linn. transf. ^e Linn. spec.
^f Krock & Linn. fuc. ^g Krock. ^h Scopoli.
ⁱ Allioni. ^k Miller.

^l Smith in Linn. transf. 2. 296.

^m Smith.

ⁿ Linn. transf. 2. 297.

^o Ray from Bauh. prodr. & hist.

^p Smith.

^q Linn. spec.

^r Scopoli.

^s Hort. kew.

^t Tourn. voy.

^u Ibid.

scales four, lanceolate, a little shorter than the calyx: petals quite entire, with the lamina of the same length with the claw. Native of Spain, on the coast^z.—It flowers from august to october; and was introduced in 1781, by Mons^r. Thouin^z.

This not being more shrubby than many others, accounted by Linneus to be herbaceous, ought to be placed with those species, to which it is, in other respects, naturally allied^a, namely at the end of the second division after n. 20.—Virgineus, n. 23. should also be in the same section or division, after attenuatus & pungens. Cæsius, n. 13. should be removed into the third section, with alpinus, & arenarius^b.

28. Plant a span in height. Root woody. Root-leaves in a tuft, linear-subulate. Stems seldom two-flowered, smooth. Tube of the calyx cylindric, with four ovate, sharp scales at the base. Petals pale purple. It is distinguished from *D. pungens* by the calycine scales, and the stems being herbaceous; from all the other species by the linear shape of the leaves. There is a variety with roundish petals, white, and red. Native of Aragon^c.

29. Root perennial, thickish, and somewhat branched. Stem herbaceous, a foot high. Leaves lanceolate, glaucous; those next the root obtuse; on the stem acute, recurved. Flowers panicle. Calycine scales six, sometimes eight, seldom four, awl-shaped, dilated at bottom, membranaceous, a little shorter than the tube of the calyx. Petals yellowish, with a few hairs and red dots within at bottom; the claws are the length of the calyx. Filaments filiform, a little longer than the calyx. Styles swelling at the base, scarcely the length of the stamens.

Native of mount Libanus^d.

This belongs to the first section.

30. This plant grows in a tuft. The leaves are acute, smooth, and half an inch long. Flowers sessile, solitary. Calyx the length of the leaves, smooth, striated: scales six, oblong, acuminate, shorter than the flower, the outer ones smaller. Petals toothed^e.]

PROPAGATION AND CULTURE.

1. *D. barbatum*, or *Sweet-William*.—Of Sweet-Williams there is a great variety of different colours, which are single, and three or four with double flowers.

Some of the single flowers have very rich colours, which frequently vary in those of the same bunch; there are others with fine variegated flowers, and others whose middles are of a soft red, bordered with white, which are called Painted Ladies; but where persons are desirous to preserve any of these varieties in perfection, the best flowers of each should be particularly marked, and no other permitted to stand near them, lest their farina should impregnate them, which would cause them to vary.

That which is called the Painted Lady Sweet-William, is a very beautiful variety; the stalks of this do not rise so high as most of the others; the bunches of flowers are larger, and produced more in the form of an umbel, the flowers standing equal in height, make a better appearance: there are others whose stalks rise three feet high, and the flowers of a very deep red or scarlet colour. These all flower at the same time with the Carnations, which renders them less valuable, because they have no scent.

[These plants must be renewed annually, to have them in perfection; for though they are perennial, yet they are subject to decay. If there are not so many varieties as of the Pink and Carnation, it is because this species has not attracted so much attention.]

The single sorts are generally propagated by seeds, which must be sown the latter end of march or the beginning of april, in a bed of light earth, and in

june they will be fit to transplant out; at which time prepare some beds ready for them, and set them at six inches distance every way: in these beds they may remain till michaelmas, when they may be transplanted into the borders of the pleasure-garden or wilderness. These will flower the next year in june, and in august perfect their seeds, which should be saved from the best-coloured flowers for a supply.

They may also be propagated by slipping their roots at michaelmas; but this is seldom practised, because seedling roots always blow the strongest, and produce new varieties.

Double Sweet-Williams are propagated by [cuttings, pipings, or] layers, as Pinks and Carnations: they love a middling soil, not too light, nor too heavy or stiff, nor too much dunged, which very often occasions their rotting. These continue flowering a long time, and are extremely beautiful, especially the Mule, which produces two full blooms of flowers, one in june, and the other in july: it is very subject to canker and rot, especially if planted in a soil too wet or dry, or if watered with sharp spring water. These flowers planted in pots, are very proper to adorn court-yards.

D. Caryophyllus. Carnation.

These flowers are propagated either from seeds (by which new flowers are obtained), or from layers, for the increase of those sorts which are worth maintaining; but I shall first lay down the method of propagating them from seeds, which is thus:

Having obtained some good seeds, either of your own saving, or from a friend that you can confide in; about the middle of april, prepare some pots or boxes, according to the quantity of seed you have to sow, filled with fresh light earth mixed with rotten neats dung, which should be well incorporated together; then sow your seeds thereon, but not too thick, covering it about a quarter of an inch with the same light earth, placing the pots or cases so as to receive the morning sun only till eleven of the clock, observing also to refresh the earth with water as often as it may require. In about a month's time your plants will come up, and if kept clear from weeds, and duly watered, will be fit to transplant about the end of july; at which time prepare some beds (of the same sort of earth as was directed to sow them in) in an open airy situation, in which plant them at about three inches square, observing to water and shade them till they have taken new root, observing to keep them clear from weeds; in these beds they may remain until the end of august, by which time they will have grown so large as almost to meet each other; then prepare some more beds of the like good earth, in quantity proportionable to the flowers you have raised, in which plant them at six inches distance each way, and not above four rows in each bed, for the more conveniently laying such of them as may prove worth preserving, for in these beds they should remain to flower.

The alleys between these beds should be two feet wide, that you may pass between the beds to weed and clean them. If the season should prove very dry at this time, they should not be transplanted till there is some rain; so that it may happen to be the middle, or latter end of september some years, before there may be wet enough to moisten the ground for this purpose; but if there is time enough for the plants to get good root before the frost comes on, it will be sufficient. If the winter should prove severe, the beds should be arched over with hoops, that they may be covered with mats, otherwise many of the plants may be destroyed, for the good flowers are not so hardy as the ordinary ones. There will be no other culture wanting to these, but to keep them clean from weeds, and when they shoot up their stalks to flower, they must be supported by sticks to prevent their breaking. When your flowers begin to blow, you must look over them to see which of them proffer to make good flowers, which as soon as you discover, you should lay

^a Linn. mant.

^b Ibid.

^z Hort. kew.

^c D'Affo.

^e Vahl.

^a Smith.

^d Billardiere.

lay down all the layers upon them; those which are well marked, and blow whole without breaking their pods, should be reserved to plant in borders, to furnish you with feed; and those which burst their pods, and seem to have good properties, should be planted in pots, to try what their flowers will be, when managed according to art; and it is not till the second year that you can pronounce what the value of a flower will be, which is in proportion to the goodness of its properties.

Having made choice of such of your flowers as promise well for the large sort, these you should mark separately for pots, and the round whole blowing flowers for borders; you should pull up all single flowers, or such as are ill-coloured, and not worth preserving, that your good flowers may have the more air and room to grow strong; these having been laid at a proper season, as soon as they have taken root, which will be some time in august, they should be taken off, and planted out, those that blow large, in pots, and the others in borders.

Of late years the whole-blowing flowers have been much more esteemed than those large flowers which burst their pods, but especially those round flowers which have broad stripes of beautiful colours, and round Rose leaves, of which kinds there have been a great variety introduced from France within these few years; but as these French flowers are extremely apt to degenerate to plain colours, and being much tenderer than those which are brought up in England, there are not such great prices given for the plants now, as have been a few years past; from the present taste for these whole-blowing Flake flowers, many of the old varieties, which had been turned out of the gardens of the florists many years ago, to make room for the large flowers, which were then in fashion, have been received again; and large prices have been paid for such flowers as some years before were sold for one shilling a dozen, or less, which is a strong proof of the variableness of the fancies of the florists.

But I shall now proceed to give some directions for propagating these flowers by layers, and the necessary care to be taken in order to blow them fair and large.

The best season for laying these flowers is in june, as soon as the shoots are strong enough for that purpose, which is performed in the following manner: after having stripped off the leaves from the lower part of the shoot intended to be laid, make choice of a strong joint about the middle part of the shoot, not too near the heart of the shoot, nor in the hard part next the old plant; then with your pen-knife make a slit in the middle of the shoot from the joint upwards half way to the other joint, or more, according to their distance; then with your knife cut the tops of the leaves, and also cut off the swelling part of the joint where the slit is made, so that the part slit may be shaped like a tongue; for if that outward skin is left on, it would prevent their pushing out roots; then having loosened the earth round the plant, and, if need be, raised it with fresh mould, that it may be level with the shoot intended to be laid down, lest by the ground being too low, by forcing down the shoot, you split it off; then with your finger make a hollow place in the earth, just where the shoot is to come, and with your thumb and finger bend the shoot gently into the earth, observing to keep the top as upright as possible, that the slit may be open; and being provided with forked sticks for that purpose, thrust one of them into the ground, so that the forked part may take hold of the layer, in order to keep it down in its proper place; then gently cover the shank of the layer with the same sort of earth, giving it a gentle watering to settle the earth about it, observing to repeat the same as often as is necessary, in order to promote their rooting. In about five or six weeks after this, the layers will have taken root sufficient to be transplanted; against which time be provided with proper earth for them, which may be composed after the following manner:

Make choice of some good up-land pasture, or a common that is of a hazel earth, or light sandy loam; dig from the surface of this your earth about eight inches deep, taking all the turf with it; let this be laid in a heap to rot and mellow for one year, turning it once a month, that it may sweeten; then mix about a third part of rotten neats dung, or for want of that, some rotten dung from a Cucumber or Melon-bed; let this be well mixed together, and if you can get it time enough beforehand, let them lie mixed six or eight months before it is used, turning it several times, the better to incorporate their parts.

Observe, that although I have mentioned this mixture as the best for these flowers, yet you must not expect to blow your flowers every year equally large in the same composition; therefore some people alter their compositions every year in this manner, viz. one year they mix the fresh earth with neats dung, which is cold; the next year with rotten horse dung, which is of a warmer nature, adding thereto some white sea sand to make the earth lighter.

But, for my part, I should rather advise the planting two or three layers of each of the best kinds in a bed of fresh earth not over dunged, which plants should only be suffered to shew their flowers, that you may be sure they are right in their kind and colours; and when you are satisfied in that particular, cut off the flower-stems, and do not suffer them to spend the roots in blowing, by which means you will strengthen your layers. And it is from these beds I would make choice of some of the best plants for the next year's blowing, always observing to have a succession of them yearly, by which means you may have every year fine flowers, provided the season proves favourable: for it is not reasonable to suppose, that the layers taken from such roots as have been exhausted in producing large flowers, and have been forced by art to the utmost of their natural strength, should be able to produce flowers equally as large as their mother root did the year before, or as such layers as are fresh from a poorer soil, and in greater health can do. But this being premised, let us proceed to the planting of these layers, which, as I said before, should be done in august, or the beginning of september.

The common method used by most florists is, to plant their layers at this season, two in each pot, the size of which pots are about nine inches over in the clear at the top; in these pots they are to remain for bloom; and therefore in the spring of the year, they take off as much of the earth from the surface of the pots as they can, without disturbing their roots, filling the pots up again with the same good fresh earth as the pots were before filled with. But there is some difficulty in sheltering a great quantity of these flowers in winter, when they are planted in such large pots, which in most winters they will require, more or less; my method therefore is, to put them singly into halfpenny pots in autumn, and in the middle or latter end of october, to set these pots into a bed of old tanner's bark, which has lost its heat, and cover them with a common frame, such as is used for raising Cucumbers and Melons; and in two of these frames, which contain six lights, may be set a hundred and fifty of these pots: in these frames you may give them as much free air as you please, by taking off the lights every day when the weather is mild, and putting them on only in bad weather and great rains; and if the winter should prove severe, it is only covering the glasses with mats, straw, or Pease-haulm, so as to keep out the frost, which will effectually preserve your plants in the utmost vigour.

In the middle or latter end of february, if the season is good, you must transplant these layers into pots for their bloom, the size of which should be about eight inches over at the top in the clear; in the doing of which, observe to put some pot-sherds or oyster-shells over the holes in the bottoms of the pots, to keep the earth from stopping them, which would

would detain the water in the pots to the great prejudice of the flowers: then fill these pots about half way with the same good compost as was before directed, and shake the plants out of the small pots with all the earth about the roots; then with your hands take off some of the earth round the outside of the ball, and from the surface taking off the fibres of the roots on the outside of the ball of earth; then put one good plant exactly in the middle of each pot, so that it may stand well as to the height, i. e. not so low as to bury the leaves of the plant with earth, nor so high, that the shank may be above the rim of the pot; then fill the pot up with the earth before-mentioned, closing it gently to the plant with your hands, giving it a little water, if the weather is dry, to settle the earth about it; then place these pots in a situation where they may be defended from the north wind, observing to give them gentle waterings, as the season may require.

In this place they may remain till the middle or end of april, when you should prepare a stage of boards to set the pots upon, which should be so ordered as to have little cisterns of water round each pot, to prevent the insects from getting to your flowers in their bloom, which, if they are suffered to do, will mar all your labour, by destroying all your flowers in a short time; the chief and most mischievous insect in this case is, the earwig, which will gnaw off all the lower parts of the petals of the flowers, which are very sweet, and thereby cause the whole flower to fall to pieces; but since the making one of these stages is somewhat expensive, and not very easy to be understood by such as have never seen them, I shall describe a very simple one, which I have used for several years, which answers the purpose full as well as the best and most expensive one can do: first, prepare some common flat pans, about fourteen or sixteen inches over, and three inches deep; place these two and two opposite to each other, at about two feet distance, and at every eight feet lengthways, two of these pans; in each of these whelm a flower-pot, which should be about six inches over at the top, upside-down, and lay a flat piece of timber, about two feet and a half long, and three inches thick, cross from pot to pot, till you have finished the whole length of your stage; then lay your planks lengthways upon these timbers, which will hold two rows of planks for the size pots which were ordered for the Carnations; and when you have set your pots upon the stage, fill the flat pans with water, always observing, as it decreases in the pans, to replenish it, which will effectually guard your flowers against insects; for they do not care to swim over water, so that if by this, or any other contrivance, the passage from the ground to the stage, on which the pots are placed, is defended by a surface of water three or four inches broad, and as much in depth, it will effectually prevent these vermin from getting to the flowers.

This stage should be placed in a situation open to the south-east, but defended from the west winds, to which these stages must not be exposed, lest the pots should be blown down by the violence of that wind, which is often very troublesome at the season when these flowers blow; indeed they should be defended by trees at some distance, from the winds of every point; but these trees should not be too near the stage, nor by any means place them near walls, or tall buildings, for in such situations the stems of the flowers will draw up too weak. About this time, viz. the middle of april, your layers will begin to shoot up for flower; you must therefore be provided with some square deal sticks, about four feet and a half long, which should be thicker toward the bottom, and planed off taper at the top; these sticks should be carefully stuck into the pots as near as possible to the plant, without injuring it; then with a slender piece of bass mat, fasten the spindle to the stick to prevent its being broken; this you must often repeat, as the spindle advances in height, and also observe to pull off all side spindles as they

are produced, and never let more than two spindles remain upon one root, nor above one, if you intend to blow exceeding large. Toward the beginning of june your flowers will have attained their greatest height, and their pods will begin to swell, and some of the earliest begin to open on one side; therefore observe to let it open in two other places at equal angles; this must be done so soon as you perceive the pod break, otherwise your flower will run out on one side, and be in a short time past recovering, so as to make a complete flower, and in a few days after the flowers begin to open, you must cover them with glasses which are made for that purpose, in the following manner:

Upon the top of the glass, exactly in the center, is a tin collar, or socket, about three fourths of an inch square, for the flower-stick to come through; to this socket are soldered eight slips of lead at equal distances, which are about six inches and a half long, and spread open at the bottom about four inches asunder; into these slips of lead are fastened slips of glass, cut according to the distances of the lead, which, when they are fixed in, are bordered round the bottom with another slip of lead quite round, so that the glass has eight angles, with the socket in the middle, and spread open at the bottom about eleven inches wide.

When your flowers are open enough to cover with these glasses, make a hole through your flower-stick, exactly to the height of the under part of the pod, through which put a piece of small wire about six inches long, making a ring at one end of the wire to contain the pod, into which ring fix the stem of the flower; then cut off all the tyings of bass, and thrust the stem of the flower so far from the stick, as may give convenient room for the flower to expand without pressing against the stick; to which distance you may fix it, by turning your wire so as not to draw back through the hole; then make another hole through the stick, at a convenient distance above the flower, through which put a piece of wire, an inch and a half long, which is to support the glasses from sliding down upon the flowers; and be sure to observe, that the glasses are not placed so high as to admit the sun and rain under them to the flowers, nor so low as to scorch their leaves with the heat. At this time also, or a few days after, as you shall judge necessary, cut some stiff paper, cards, or some such thing, into collars about four inches over, and exactly round, cutting a hole in the middle of it about three fourths of an inch diameter, for the bottom of the flower to be let through; then place these collars about them, to support the petals of the flower from hanging down; this collar should be placed within the calyx of the flower, and should be supported thereby; then observe from day to day what progress your flowers make; and if one side comes out faster than the other, turn the pot about, and shift the other side towards the sun; and also if the weather proves very hot, shade the glasses in the heat of the day with Cabbage leaves, &c. to prevent their being scorched, or forced out too soon; and when the middle pod begins to rise, take out the calyx thereof with a pair of nippers made for that purpose; but this should not be done too soon, lest the middle part of the flower should advance too high above the sides, which will greatly diminish the beauty of it; and you should also observe whether there are more leaves in the flower than can properly be expanded for want of room; in which case you should put out some of the lowermost or most unlikely leaves to spread, drawing out and expanding the others at the same time; and when your flowers are fully blown, if you cut them off, put on a fresh collar of stiff paper, which should be cut exactly to the size of the flower, that it may support the petals to their full width, but not to be seen wider than the flower in any part: when this is put on, draw out the widest leaves to form the outside of the flower, which although they should be in the middle, yet by removing the other leaves they may be drawn down,

down, and so the next longest leaves upon them again, that the whole flower may appear equally globular without any hollow parts. In the doing of this, some florists are so curious as to render an indifferent flower very handsome; and on this depends, in a great measure, the skill of the artist to produce large fine flowers.

During the flower season, particular care should be taken not to let them suffer for want of water, which should by no means be raw spring water; nor do I approve of compound waters, such as are enriched with various sorts of dung; but the best and most natural water is that of a fine soft river; next to that is pond water, or standing water; but if you have no other than spring water, it should be exposed to the sun and air two days before it is used, otherwise it will give the flowers the canker and spoil them.

The directions here given are chiefly for the management of those large Carnations, which require the greatest skill of the florists, to have them in perfection; but of late years these have not been so much in esteem as formerly, and those flowers which do not break their pods, and are termed whole Blowers, have now the preference. These are generally planted in pots, and treated in the same way as the large flowers, but do not require so much trouble to blow them: all that is necessary to be done for these, is to fasten their stems up to flower-sticks to prevent their being broken, and to take off the pods which proceed from the side of the stalks, leaving only the top bud to flower, if they are intended to be large and fair; and when the flowers begin to open, if they are screened from the sun in the heat of the day, and also from wet, they will continue much longer in beauty.

But although the most valuable of these flowers are usually planted in pots, and thus carefully treated, yet many of these whole blowing flowers may be planted in beds, or borders of the flower-garden, where they are some of the principal ornaments during their continuance in flower, which is from the beginning of july till the middle of august, especially if the several colours are properly intermixed; for the Flakes and Bizarrs should be intermixed with the Picquettes, and not planted separate, unless where they are designed for saving the seeds; in which case, those which are the finest of each sort, should be planted in beds at a distance from each other, especially where persons are desirous to keep them distinct; for where the sorts are blended together, there will be an admixture of their farina, so that the seeds will vary, and not produce the particular kinds; though I do not remember ever to have seen any Flake flowers arise from seeds of the Picquettes, nor vice versa.

The flowers which are planted in the full ground, generally produce seeds better than those in pots; but whoever proposes to raise a supply of new flowers from seeds, must always observe to save the best of their seedling flowers for this purpose; for it is well known, that after any of these flowers have been a few years propagated by layers, they become barren, and do not seed; which is also the case with most other plants which are propagated by slips, layers, or cuttings; so that the young plants which have been newly obtained from seeds, are always the most productive of seeds: the plants which are propagated by layers or slips, will always continue to produce the same flowers, so that when a fine variety is obtained, it is this way propagated and maintained; but all the new varieties come from seeds, so that all those who are curious in these flowers, annually sow their seeds.

[Carnations may also be increased by cuttings and pipings as Pinks are, but not so successfully in general as by layers, unless the operation is performed on a hot-bed under glasses. The cuttings for piping should have two joints, should be thrown into water a few minutes, and planted not more than half an inch deep. They are to be gently watered, and to continue open till their leaves are dry before they

are covered. After this, they are to be kept moist till they have rooted, to have only the morning sun, and air is to be given them occasionally. But with all this care, success will at least be uncertain; or at best, many of the cuttings will frequently perish.]

Pinks.

The common Pinks are propagated either by seeds, which is the way to obtain new varieties; or by layers, as is practised for Carnations; or by slips, or pipings as they are commonly called, which, if carefully managed, will take root very well.

If they are propagated by seeds, care should be taken in the choice of them, and only the seeds of the best sorts saved, where persons are curious to have the finest flowers. These seeds may be sown in the spring, and the plants afterwards treated in the same manner as has been directed for the Carnation; with this difference only, that as the Pinks are less tender, they may be more hardily treated. Those which are propagated by layers, must be also managed as the Carnation. The old Man's Head and painted Lady Pinks are commonly propagated this way, but most of the other sorts are increased from cuttings, or pipings.

The best time for this is about the end of july, when, if there should happen any rain, it will be of great service; but if the weather should prove dry, the cuttings or pipings will require to be watered every other day, until they have taken root. They should be planted in a shady border, and the ground should be dug well, and all the clods broken, and if no rain falls, it should be well soaked with water a few hours before they are planted; then they should be taken from the plants, and all their lower leaves stripped off, and planted as soon as possible after, for if they are suffered to lie long after they are taken from the plants, they will wither and spoil; these need not be planted at a greater distance than three inches square, and the ground must be closed very hard about them; then they must be well watered, and this must be repeated as often as is found necessary, till they have taken root; after which they will require no other care but to keep them clean from weeds till autumn, when they should be transplanted to the borders of the flower-garden where they are to remain. There are some who perform this operation later in the season than is here directed; but those plants are never so strong nor flower so well, as those which are early planted.

[The time most proper for piping will vary with the season, but it should always be done immediately before or during the bloom, or indeed as soon as the young shoots are of a sufficient length for the purpose; that is, to form pipings from two to three inches in length. The striking will be much facilitated by covering the beds or pots with glasses, after having given them a good watering; not taking off the glasses till the cuttings or pipings begin to grow, but applying the water, when necessary, round the outside of the glasses. In a month or six weeks they will be rooted and grow, when they may be fully exposed. The only difference between cuttings and pipings is, that the former are cut through a joint horizontally, and the latter are drawn out at the joint from their sockets, so that they leave a hollow like a pipe, and thence derive their name.

Pinks may also be increased, by slipping off the young shoots from the sides of the main ones, any time in the spring from february to april. The slips should be from three or four to six or eight inches in length.]

15. *D. chinensis.* China or Indian Pink.—The China Pink is generally supposed an annual plant, because the plants which are raised from seeds flower and produce ripe seeds the same season, so their roots are not often preserved; but where they are planted on a dry soil, they will continue two years, and the second year will produce a greater number of flowers than the first. There are a great

variety of very rich colours in these flowers, which annually vary when raised from seeds. The double flowers of this sort are most esteemed, though the colours of the single are more distinct and beautiful; for the multiplicity of petals in the double flowers, in a great measure, hides the deep shades, which are toward the lower part of the petals.

These plants are propagated by seeds, which should be sown upon a gentle hot-bed about the beginning of april; this moderate heat is only intended to forward the vegetation of the seeds, therefore when the plants come up, they must have a large share of air admitted to them, to prevent their drawing up weak; and as soon as the weather will permit, they must be exposed to the open air; in about three weeks or a month after, the plants will be fit to remove; then they should be carefully taken up with good roots, and planted in a bed of rich earth, at about three inches asunder, being careful to shade them from the sun till they have taken new root, and in dry weather they must have water three or four times a week. The farther care is to keep them clean from weeds till the end of may, at which time they may be transplanted to the places where they are designed to remain for flowering, when they may be taken up with large balls of earth to their roots, so as scarcely to feel their removal, especially if it happens to rain at that time.

As these plants do not grow large, so when they are planted singly in the borders of the flower-garden, they do not make so fine an appearance, as where they are planted by themselves in beds; or if they are planted in small clumps, of six or eight roots in each, where the flowers being of different colours, set off each other to advantage.

Those who are curious in these flowers, take particular care in saving their seeds, for they never permit any single flowers to stand among their double, but pull them up as soon as they shew their flowers, and also draw out all those which are not of lively good colours; where this is observed, the flowers may be kept in great perfection; but where persons have trusty friends, who live at some distance, with whom they can exchange seeds once in two or three years, it is much better so to do, than to continue sowing seeds in the same place many years in succession, and this holds true in most sorts of seeds: but the great difficulty is to meet with an honest person of equal skill, who will be as careful in the choice of his plants for seed, as if he was to sow them himself.

[19. *D. superbus* deserves a place in every curious garden, on account of the elegance and delicious fragrance of the flowers. It grows naturally in a calcareous soil, and will thrive luxuriantly in a garden if chalk be mixed with the common mould, but not otherwise^f.

The other European sorts are hardy, easily raised from seeds, and cultivated with little trouble; but the flowers being small, and in general not having much scent, they are little noticed, except in botanic gardens; their beauty however, though lost in the superior blaze of Pinks and Carnations, is not inconsiderable; and they are peculiarly ornamental on walls and rock-work, and in dry, barren spots, where few plants will flourish.

The Cape Pink (n. 14.) is the only sort which will not bear the open air in our climate.

24, 25, 26. The woody or shrubby Pinks are noble ornamental plants, and it is to be lamented that they are lost to our gardens.

DIANTHUS saxifragus. See *Gypsophila*.

DIAPENSIA, (*Διαπενσις*, deeply grieving or mourning: probably from its trist situation.)

Lin. gen. n. 194. Reich. 207. Schreb. 255. Fl. lapp. i. Juss. 135.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Precie*.—*Convolvuli*, Jussieu.

GENERIC CHARACTER.

CAL. Perianth eight-leaved: the five interior leaflets

placed in a circle, the rest leaning upon them in an imbricated manner, all equal, ovate, obtuse, erect, permanent.

COR. one-petalled, falver-shaped. *Tube* cylindric, open, length of the calyx. *Border* five-cleft, obtuse, flat.

STAM. *Filaments* five, compressed-linear, erect, terminating; the tube at the incisures of the border short. *Anthems* simple.

PIST. *Germ* roundish. *Style* cylindric, length of the stamens. *Stigma* obtuse.

PER. *Capsule* roundish, three-celled, three-valved.

SEEDS very many, roundish.

ESSENTIAL CHARACTER.

Cor. falver-shaped. *Cal.* five-leaved, imbricate with three other leaflets. *Stam.* placed on the tube of the corolla. *Caps.* three-celled.

SPECIES.

1. *Diapensia lapponica*.

Lin. spec. 202. Reich. i. 407. fl. lapp. n. 88. t. i. f. i. suec. n. 169. Fl. dan. t. 47.

Flowers peduncled.

DESCRIPTION, &c.

Root perennial. Stem rising immediately from the root, and dividing into several simple diffused branchlets, clothed all round with leaves, at most a finger's height. Leaves linear, blunt, almost membranaceous, having a longitudinal nerve, concave above, prominent beneath, a little broader outwards, imbricate at the base, spreading at the top, perennial; the lower ones finally withering, but not falling. Peduncle from the top of the branch, straight, slender, one-flowered. Corolla shining, snowy-white. It has somewhat the appearance of a *Sedum*.

Native of the mountains of Lapland, among stones covered with moss. Also in Norway.

DIAPENSIA. See *Aretia* and *Sanicula*.

DICERA. (From *dis* twice, and *κερας*, a horn; on account of its two-horned anthers.)

Forst. gen. 79. t. 40. Schreb. gen. n. 899.

Class. 13. 1. Polyandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth four or five-parted: leaflets equal.

COR. *Petals* four or five, obovate, trifid: segments obtuse, the middle one longest.

Nectary of four or five small, emarginate corpuscles, surrounding the germ.

STAM. *Filaments* (twelve to twenty) several, between the nectary and the germ, capillary, short. *Anthems* linear, two-horned at top.

PIST. *Germ* roundish, *Style* awl-shaped, longer than the stamens. *Stigma* simple.

PER. *Berry*? ovate, two-celled.

SEEDS very many.

Obs. *D. ferrata* has four styles, and a four-celled two-seeded berry, F.

ESSENTIAL CHARACTER.

Pet. four or five obovate, trifid. *Nect.* of four or five emarginate corpuscles. *Anthems* two-horned.

SPECIES.

1. *Dicera dentata*.

Forst. gen. 80. flor. austral. n. 226.

Elæocarpus ferratus. Lin. suppl. 266.

Style one, leaves oblong acuminate toothed, racemes simple axillary loose.

2. *Dicera ferrata*.

Forst. gen. 80. flor. austral. n. 227.

Elæocarpus Dicera. Lin. suppl. 266.

Styles four, leaves opposite cordate-ovate unequally serrate, racemes lateral compound.

DESCRIPTIONS, &c.

1. This is an elegant tree, bearing at the extremities of the branches abundance of leaves, which are alternate, oval or oval-oblong, bluntish, smooth, veined, bluntly ferrate, petioled, with a double gland at

^f Smith Spicil.

² Linn. lapp.

their base. Racemes axillary, simple, loose, solitary, the length of the leaves^b. Flowers on very minute pedicels, nodding. Stamens sixteen when there are four, and twenty when there are five petals^c. Linneus remarked twenty stamens in the Ceylonese plant, and only eight in that from Java^d. Pistil single. Fruit an oval berry? with a hard stone in it. It is preserved whilst unripe after the manner of Olives^e. See *Elæocarpus ferratus*.
Native of New Zealand.

2. This agrees in the structure of the flower with the preceding, but it differs in the fruit.—Native of New Zealand^f. See *Elæocarpus Dicera*.

DICHONDRA. (From *dis* twice, and *χονδρος*, a grain, because two little grains succeed to each flower.)

Forst. gen. 40. t. 20. Smith ic. ined. 1. 8. Juss. 129. Schreb. n. 451.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Asperifoliae*. *Borragineæ*. Juss.

GENERIC CHARACTER.

CAL. five-leaved: leaflets obovate, netted-nerved, hairy without, smooth within, permanent.

COR. monopetalous, inferior, rotate, subcampanulate, five-cleft, the length of the calyx.

STAM. Filaments five; subulate, spreading, placed alternately between the divisions of the corolla, and only half the length. Anthers roundish.

PIST. Germs two hairy. Styles two divaricate, setaceous, the length of the stamens, arising on the inside from the base of the germs. Stigmas capitate.

PER. Capsules two globular subhirsute, one-celled.

SEEDS one in each cell, globular.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. rotate, inferior. Caps. dicoccous.

SPECIES.

1. *Dichondra repens*.

Forst. gen. 20. fl. austral. n. 134. Smith ic. ined. 1. 8. Sibthorpea evolulacea. Linn. suppl. 288.

DESCRIPTION, &c.

Stem prostrate creeping branched round. Leaves alternate, petioled, erect, kidney-shaped, sometimes emarginate, above almost naked, below silky, radiate-veined: petioles round silky. Flowers small, rather nodding, on axillary filiform simple silky peduncles, scarcely the length of the petioles, and usually solitary. This was at first taken by Linneus for a species of *Sibthorpea*, from which it differs both in class and order, and in having two capsules with a single seed in each, instead of a two-celled many-seeded capsule, which the *Sibthorpea* has. It is also very distinct from *Falkia*, which it resembles somewhat in the leaves.—The specimens from different countries differ in having the leaves naked above, or silky on both sides; also in the length of the petioles and peduncles; but these seem only to be varieties.

Mutis sent it to Linneus from New Granada. Commerfon found it at Buenos Ayres, and in the island of Mauritius. It is also known to be a native of Peru, Jamaica and New Zealand^g.

DICHOTOPHYLLUM. See *Ceratophyllum*.

DICKSONIA. (So named by Mons. L'Heritier, from Mr. James Dickson; who from his accurate knowledge in the Cryptogamia class, well deserves such an honour.)

L'Herit. fert. angl. 30. t. 43.

Class. 24. 1. Cryptogamia Filices.

Nat. order of *Filices*, or *Ferns*.

GENERIC CHARACTER.

Fructifications kidney-shaped lying under the edge of the frond at the lower surface: outer valve formed of the substance of the leaf itself, inner membranaceous.

SPECIES.

1. *Dicksonia arborefcens*. Tree *Dicksonia*.

L'Herit. fert. angl. 31. t. 43. Ait. hort. kew. 3. 469.

Fronds superdecompound villöse, leaflets almost entire; stem arboreous.

^b Linn. zeyl.

^c Burm.

^d Mant.

^e Burm.

^f Linn. suppl.

^g Smith:

2. *Dicksonia Culcita*. Shining-leaved *Dicksonia*.

L'Herit. fert. angl. 31. n. 2. Ait. hort. kew. 3. 469.

Polypodium Barometis. Lin. spec. 1553?

Fronds superdecompound smooth: leaflets serrate.

DESCRIPTIONS, &c.

1. Found by Sir Joseph Banks and Dr. Solander in the island of St. Helena^h.—Introduced 1786, by Mr. Anthony Hove. It flowers most part of the winterⁱ.

2. Found in the island of Madeira, where it is called *Feila Brom*; and in the island of S. Miguel, one of the Azores, by Masson.—The inhabitants make pillows and cushions of the roots.

There is little doubt but that this plant and the *Barometis* or *Scythian Lamb* are one and the same, though they come from countries so remote. See *Philos. Transact.* for 1698. n. 247. p. 461.—and for 1725. n. 390. p. 353. It is figured in both places. Also *Deusing. diff.* 596. *Kämpf. amæn.* 505, &c.^k—Introduced 1779^l.

DICONANGIA. See *Itea*.

DICRANUM. A genus in *Cryptogamia Musci*, *Schreb.* n. 1644. *Hedw. fund.* 2. p. 91. Comprehending also his *Fissideus*. It embraces several species of *Mnium*, *Bryum* and *Hypnum*, of Linneus.

DICTAMNUM. See *Origanum*.]

DICTAMNUS. (From *τίκτειν*, deducere, Lin. *Δικταμνος*, *Δικταμνος*, & *Δικταμνος*, *Theophr. Dioscor.* *Fraxinella*, dimin. of *Fraxinus*, an *Ash*; from the form of the leaves.)

Engl. *Fraxinella*. Fr. *Fraxinelle*.

Lin. gen. n. 522. Reich. 564. Schreb. 726.

Juss. 297. *Fraxinella*. Tourn. 243. Gærtn. 69.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Multifiliqueæ*.—*Rutaceæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved, very small, deciduous: leaflets oblong, acuminate.

COR. Petals five, ovate-lanceolate, acuminate, with claws, unequal: of which two are bent upwards: two placed obliquely at the sides; one bent downwards.

STAM. Filaments ten, subulate, length of the corolla, situated between the two lateral declining petals, unequal; small point-like glands scattered over the filaments. Anthers four-sided, rising upwards.

PIST. Germ five-cornered, elevated from the receptacle. Style simple, short, bent downwards, incurved. Stigma sharp, rising upwards.

PER. Capsules five, conjoined inwardly at the border, compressed, acuminate, with distant tips, two-valved.

SEEDS in pairs, ovate, very smooth, within a common aril, which is two-valved, and cut down.

ESSENTIAL CHARACTER.

Cal. five-leaved. Petals five, patulous: Filaments having glandulous dots scattered over them. Caps. five, conjoined.

SPECIES.

1. *Dictamnus albus*. *Fraxinella*.

Lin. spec. 548. syst. 347. Reich. 2. 264. hort. cliff. 161. hort. upf. 102. mat. med. 113. suppl. 232. Jacqu. austr. 5. t. 428. Scop. carn. n. 476. Pollich pal. n. 392. Allion. pedem. n. 1679. Villars dauph. 3. 581. Mill. fig. t. 123. Martyn's letters, t. 16. f. 2. Woodw. med. bot. 316. t. 116. Plenck, ic. t. 325.

D. albus vulgo, f. *Fraxinella*. Baub. pin. 222. Blackw. t. 75.

Fraxinella alba. Gærtn. fruct. 1. 337. Hall. herb. 1029.**

Fraxinella. Clus. pannon. 54. hist. 1. 99. Dod. purg. 83. Renealm. spec. 122. t. 121. Garid. aix. 191. t. 38. Best. cyst. æst. 9. t. 5. f. 1. Rivin. pent. t. 132. Ger. 1065. emac. 1245. Park. parad. 333. theat. 417. Mor. hist. 3. 456. f. 12.

^h L'Heritier.

ⁱ Hort. kew.

^k L'Herit.

^l Hort. kew.

t. 1. lower row. *Bauh. hist.* 3. 494. f. 2. *Raii hist.* 698.

Leaves pinnate, stem simple.

[2. *Dictamnus capensis.*

Lin. syst. 397. *suppl.* 232.

Pallasia capensis. *Houtt. pflanz. syst.* 3. 319. t. 22.

Leaves simple, stem branching.]

DESCRIPTIONS, &c.

1. Root perennial, striking deep into the ground, and the head annually increasing in size. Stalks many, two or three feet high, [round, here and there slightly grooved, sometimes subcapitate, not branched, at bottom green and beset with white hairs, ferruginous red towards the top, with resinous glands. Leaves alternate, the larger above a foot in length, spreading out horizontally, ascending towards the end; the midrib flat at top and edged on both sides, convex beneath and hairy; leaflets from two to five pairs, with an odd one at the end, most of them alternate, except the top pair or two, sessile or subsessile, except the end one, which is on a long winged petiole, smooth, stiff, oblique except the end one, ovate, acute, serrate, shining on both sides, about two inches long and an inch wide. The whole somewhat resembling an Ash leaf.] Flowers in a long pyramidal loose spike or raceme, nine or ten inches long: [the branches of the raceme alternate, with a bracte at the foot of each, one or two-flowered: there is also a short, lanceolate, hairy bracte to each pedicel. The red glands are ovate, pedicelled, acuminate, and have white hairs interspersed. Calyx deeply five-cleft; segments lanceolate, obtuse, the three upper red, the two lower green. Corolla large and handsome, the common natural colour pale purple with dark purple veins, but varying to white, the four upper petals stand erect, and the genitals stretch out horizontally on the fifth, on and about the middle nerve at the back it has the same red glands as are on the pedicel. Filaments pale purple, concealing the germ and style; ascending or turning up at the end, glandular especially at top: anthers green. Germ covered with pedicelled glands; style with white hairs; stigma blunt, dark purple. To each flower succeeds a fruit consisting of five compressed capsules, spreading out like the points of a star, rough with hairs and glandular tubercles, ending at top in a straight line, with a short upright tooth or process at the inner end, and a long red one stretching out at the other. Within this skin is a cartilaginous ovate-oblong shell, obliquely truncate at top, deeply emarginate and cut out on the inner side for the reception of the receptacle, two-valved, one-celled, opening elastically within. Seeds two according to Linneus; Scopoli says, only one. Gærtner affirms that there are six or eight in a capsule, but that only one or two come to maturity. I have generally found two ripe seeds, without any vestiges of more; sometimes one has been abortive. They are pear-shaped, very smooth, black and shining.]

The whole plant, especially when gently rubbed, emits an odour like that of lemon-peel, but when bruised it has something of a balsamic scent. [This fine scent is strongest in the pedicels of the flowers, which are covered with glands of a rusty red colour, exuding a viscid juice or resin, which exhales in vapour, and in a dark place may be seen to take fire.

Fraxinella is a native of Germany, France, Spain, Austria, and Italy.] It flowers with us at the end of May, and in June, and the seeds ripen in September. For its beauty and fine scent it deserves a place in every good garden. [It was cultivated by Gerarde in 1596^a, and is named by him *Bastard* or *False Dittany*. Parkinson calls it *False White Dittany*.

2. This resembles the first species very nearly. The simple leaves are alternate, and like the leaflets of the preceding. The raceme is the same in both.

^a Hort. kew.

It is a native of the Cape of Good Hope^b.—The same with *Calodendrum capense*^c; which see.]

PROPAGATION AND CULTURE.

Fraxinella is propagated by seeds, which if sown in the autumn soon after they are ripe, the plants will appear the following April; but when they are kept out of the ground till the spring, the seeds seldom succeed; or if they do grow, it is the following spring before the plants appear, so that a whole year is lost. When the plants come up, they must be constantly kept clean from weeds; and in the autumn when their leaves decay, the roots should be carefully taken up, and planted in beds at six inches distance every way; these beds may be four feet broad, and the paths between them two, that there may be room enough to pass between the beds to weed them. In these beds the plants may stand two years, during which time they must be constantly kept clean from weeds; and if they thrive well, they will be strong enough to flower; in the autumn they should be carefully taken up, and planted in the middle of the borders of the flower-garden; where they will continue thirty or forty years, producing more stems of flowers in proportion to the size of the roots. All the culture these require, is to be kept clean from weeds, and the ground about them dug every winter.

DICTAMNUS CRETICUS. See *Origanum*.

[*DIDELTA.* (From *dis*, twice; and the capital Greek letter Δ ; the receptacle having the form of a double delta, or double equilateral triangle.)

L'Herit. stirp. nov. t. 28. *Juss. gen.* 182. *Schreb.* 1351.

Class. 19. 3. Syngenesia Polygamia Frustranea.

Nat. order of Compound flowers.—*Corymbiferae.* *Juss.*

GENERIC CHARACTER.

CAL. common double, permanent: outer three-leaved or three-parted, umbilicated at the back; leaflets cordate, acuminate, much expanded, tomentose-hoary above: inner placed on the disk of the outer, shorter, composed of eleven or twelve leaflets, which are linear-lanceolate, very acute, serrate-prickly, one-nerved, spreading, five or six alternately shorter by half than the others; the twelfth often wanting.

COR. compound radiated. Corollets hermaphrodite numerous, shorter than the calyx; barren in a deltoid disk, fertile in the outer triangles of the receptacle. Females eleven or twelve in the ray, each opposite to one of the calycine leaflets, and double the length of the calyx. Proper in both hermaphrodites funnel-shaped, half-five-cleft; border five-parted, linear, acute, patulous, revolute, brown at the tip: female ligulate, four or three-toothed, three-furrowed, tubular at the base, spreading.

STAM. in both hermaphrodites; filaments five, capillary, very short, inserted into the tube; anther cylindric, tubular, five-toothed, brown at the tip, the length of the corollet. In the females the rudiment of one stamen inserted at the top of the tube.

PIST. in the perfect hermaphrodites germ inferior, immersed in the receptacle, oblong, compressed, crowned with a thin, short pappus or down, like the eye-lashes. Style slender, finally standing out. Stigma two-parted, subulate, revolute. In the barren hermaphrodites, germ roundish, very small, immersed; in other respects as in the fertile. Females, scarcely any rudiment of a germ.

RECEPT. deltoid, flat, honey-combed with labyrinthed membranes, distinct and finally resolvable into four partial deltas or triangles; the central naked, barren; the side ones producing seeds, roughened with stiff brown bristles, becoming hard and in separating from each other becoming a

PERIC. Nuts three, bony, three-cornered, flattened; stiff-bristly, from the outer triangles of the receptacle gaped and hardened, each retaining an outer leaf and the opposite inner calycine leaflets or one third part of the calyx, and many-celled.

^b Linn. suppl.

^c Swartz obs.

SEEDS. Small kernels (*nucleoli*) as many as there were germs, but some abortive, oblong. Down simple, thin, short, stiffer than in the flower.

ESSENTIAL CHARACTER.

Cal. expanding; outer leafy. Recept, honey-combed, dividing into parts which retain the seeds. Down chaffy, many-leaved.

SPECIES.

1. *Didelta carnosifolia*. Succulent-leaved *Didelta*.

Ait. hort. kew. 3. 256.

D. tetragonifolia. L'Herit. stirp. nov. 55. t. 28.

Polymnia carnosifolia. Lin. syst. 790. suppl. 384.

Leaves alternate lanceolate-oblong fleshy.

2. *Didelta spinosifolia*. Opposite-leaved *Didelta*.

Ait. hort. kew. 3. 256.

Polymnia spinosifolia. Lin. syst. 790. suppl. 384.

Leaves opposite somewhat stem-clasping ovate.

DESCRIPTIONS, &c.

1. This plant is somewhat fleshy, and has the air of *Tetragonia*. Seed-leaves two, clasping, obovate, fleshy, smooth. Stem herbaceous, very much branched, erect, round, eighteen inches in height: branches alternate, diffused, fleshy, smooth, green, the thickness of a quill; the extreme branchlets woolly. Leaves alternate, sessile, spreading, acute, attenuated at the base, quite entire, revolute, woolly above, beneath one-nerved, smooth, veinless, two or three inches long, six or eight lines broad, in the stove permanent. Flowers solitary, terminating, on long peduncles, scarcely nodding, yellow. Annual, but in the stove enduring some years, and becoming somewhat shrubby, which is frequently the case with some annual plants.

It is a native of the Cape, and was found there by Mr. Fr. Masson. It flowers in July, and was introduced in 1774.

2. This is very smooth; the leaves are broad, and the outer calyx is five-leaved.—This also is a native of the Cape, whence it was brought by Thunberg, and Fr. Masson. It flowers in June and July, and was introduced the same year with the former.

PROPAGATION AND CULTURE.

These plants may be propagated both from seeds and cuttings, must have the protection of a dry stove or glass-case, and may be managed as other Cape plants.

DIDYMODON. One of Hedwig's genera of Mosses.

DIER'S-BROOM or DIER'S-weed. See *Genista*.

DIER'S-WEED. See *Reseda*.

DIERVILLA. See *Lonicera*.

DIGITALIS. (So named from the resemblance of the flower to the finger of a glove, *Digitale*; or from the adjective *Digitalis*, of or belonging to a finger.)

Engl. Fox-glove. Fr. *Digitale*.

Lin. gen. n. 758. Reich. 816. Schreb. 1017.

Tourn. 73. Gertn. t. 53. Juss. 120.

Class. 14. 2. *Didynamia Angiospermia*.

Nat. order of *Luridæ*. Lin. *Scrophulariæ*. Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted: divisions roundish, sharp, permanent; the superior longer than the rest.

COR. one-petalled, bell-form. Tube large, expanding, bellied downwards; cylindric and close at the base. Border small, four-cleft: upper division more expanding, emarginate; inferior division larger.

STAM. Filaments four, subulate, inserted into the base of the corolla, bent downwards, of which two are longer. Anthers two-parted, acuminate on one side.

PIST. Germ acuminate. Style simple, in the situation of the stamens. Stigma sharp.

PER. Capsule ovate, length of the calyx, acuminate, two-celled, two-valved, valves bursting in two directions: (partition double from the inflex edges of the valves, G.)

SEEDS very many, small, (subprismatic, G.)

Obs. There are species in which the divisions of the corolla are sharp and more evident, and the upper lip as well as the lower sharp, and more prominent.

^a L'Heritier.

^b Hort. kew.

^c Hort. kew.

^d Linn. suppl.

ESSENTIAL CHARACTER.

Cal. five-parted. Cor. bell-form, five-cleft, belly-ing. Caps. ovate, two-celled.

SPECIES.

1. *Digitalis purpurea*. Purple Fox-glove.

Lin. spec. 866. syst. 562. Reich. 3. 151. hort.

upf. 178. cliff. 318. Gertn. fruct. 247. Hudf.

angl. 275. With. 654. Curtis lond. 1. 48.

Lightf. scot. 330. Woodv. med. bot. 71. t. 24.

Hall. belv. n. 330. Pollich pal. n. 598. Krock.

files. n. 999. Villars dauph. 2. 420. Fl. dan.

t. 74. Berg. phyt. 95. Blackw. t. 16. Riv.

mon. t. 104. Dod. pempt. 168. Fuchf. hist. 893.

Trag. 889. Lob. ic. 1. 572. 1, 2. Baub. hist. 2.

812. 3. Raii hist. 767. syn. *283. Ger. 646. 1.

emac. 790. 1. Park. theat. 653. 1. Mor. hist.

f. 5. t. 8. f. 1.

D. purpurea fol. aspero. Baub. pin. 243.

β. *D. alba*. Ger. emac. 790. f. 2.—fol. aspero. Baub.

pin. 244.—major alba. Park. parad. 382. n. 4.

Foxglove with white flowers.

Calycine leaflets ovate acute; corollas obtuse, upper lip entire (very slightly notched. With.)

- [2. *Digitalis minor*.

Lin. syst. 562. mant. 567. Reich. 152.

D. hispanica purpurea minor. Tournef. inst. 165.

Corollas obtuse, upper lip slightly two-lobed; leaves even.]

3. *Digitalis Thapsi*. Spanish Foxglove.

Lin. spec. 869. Reich. 152.

D. verbasci fol. purpurea minor perennis *hispanica*.

Barrel. ic. 1185.

D. angusto verb. fol. montana. Bocc. mus. 2. 107.

t. 85.

Leaves decurrent.

4. *Digitalis lutea*. Small yellow Foxglove.

Lin. spec. 867. Reich. 153. hort. upf. 178. cliff.

318. Hall. belv. n. 332. Scop. carn. n. 779.

Jacqu. hort. 2. t. 105. Krock. files. n. 998.

Villars dauph. 2. 419. Tabern. 567. Lob. adv.

245. ic. 573.

D. parviflora. Allion. pedem. n. 257.

D. fl. minore subulneo, angustiore fol. Baub. hist. 2.

814.

D. major lutea vel pallida, parvo fl. Baub. pin. 244.

Raii hist. 768. Sabb. hort. 2. t. 88.

D. lutea minore flore. Mor. hist. 2. 479. f. 5. t. 8.

f. 5. Riv. mon. t. 105.

D. minor lutea f. pallida. Park. parad. 382. n. 7.

Calycine leaflets lanceolate, corollas acute, upper lip bifid.

5. *Digitalis ambigua*. Greater yellow Foxglove.

Lin. syst. 562. Reich. 153. suppl. 282. Murr.

prod. 62. Hall. belv. n. 331. Krock. files. n.

1000.

D. ochroleuca. Jacqu. aust. 1. t. 57.

D. grandiflora. Allion. pedem. n. 258. Mill. dict.

n. 4. Villars dauph. 2. 419.

D. lutea. Pollich pal. n. 599. β. Leers herb. n.

487.—magno flore. Baub. pin. 244. Mor.

t. 8. f. 4. Raii hist. 768.—amplo fl. Park.

parad. 382. n. 6. theat. 653. f. 2.—fl. majore,

fol. latiore. Baub. hist. 2. 813. f. 1.

Calycine leaflets lanceolate, helmet of the corolla emarginate, leaves pubescent underneath.

6. *Digitalis ferruginea*. Iron-coloured Foxglove.

Lin. spec. 867. syst. 562. Reich. 153. Sabb.

hort. 2. t. 86. Allion. pedem. n. 260. Ger.

emac. 790. f. 4.

D. angustifolia, fl. ferruginea. Baub. pin. 244. Riv.

mon. t. 98.

D. ferrug. fol. angustiore. Baub. hist. 2. 813. f. 2.

D. latifolia & angustifolia fl. ferrug. Mor. 2. 478.

t. 8. f. 2, 3.

D. maxima ferrug. Park. parad. 380. n. 1. f. 6.

Raii hist. 768.

Calycine leaflets ovate obtuse spreading, lower lip of the corolla bearded.

- [7. *Digitalis obscura*. Willow-leaved Foxglove.

Lin. spec. 867. Reich. 154. mant. 418. Jacqu.

hort. 1. t. 91.

D. hispanica angustifolia. Bocc. mus. 2. 136. t. 98.
—fl. nigricante. Tournef. inst. 166.

Leaves linear-lanceolate quite entire growing together at the base.]

8. *Digitalis canariensis.* Canary shrubby Foxglove.
Lin. spec. 868. Reich. 154. hort. cliff. 318.
(Gesneria). Mill. fig. t. 120. Comm. hort. 2.
105. t. 53. Pluk. alm. t. 325. f. 2.

Calycine leaflets lanceolate; corollas two-lipped acute, stem shrubby.

- [9. *Digitalis Sceptum.* Madeira shrubby Foxglove.
Lin. syst. 563. suppl. 282. L'Herit. fert. angl. 21.
t. 24. Ait. hort. kew. 2. 346.

Calycine leaflets subulate; bractes linear longer than the flowers; corollas obtuse, leaves elliptic serrate, stem shrubby.]

10. *Digitalis orientalis.*

Mill. dict. n. 7.

Calycine leaflets acute, leaves ovate-lanceolate nerved.

11. *Digitalis cochinchinensis.*

Lour. cochinch. 378.

Leaves lanceolate rough, flowers solitary axillary, calyxes acute; corollas obtuse emarginate at top.

12. *Digitalis sinensis.*

Lour. cochinch. 378.

Leaves ovate, hairy on both sides, flowers solitary axillary, segments of the calyx awl-shaped, corollas obtuse entire at top.

DESCRIPTIONS, &c.

These are large plants, with alternate leaves, and flowers in spikes at the ends of the stem and branches. The first, and probably the second and third species are biennial; the rest are commonly said to be perennial, though Miller affirms that they are all biennial except his *orientalis*. The eighth and ninth sorts are certainly somewhat shrubby, and therefore perennial.

1. *Root* biennial. *Stem* three to six feet high, simple, upright, leafy, round, pubescent. *Leaves* alternate, ovate-acute, serrate, veiny, wrinkled, underneath whitish with pubescence, gradually lessening to both ends; petioles short, winged. *Flowers* in a long spike, nodding, imbricate, all directed the same way: peduncles one-flowered, pubescent, thickest at top. Calyx also pubescent. Corolla purple, the bell-shaped part sprinkled on the inside with spots like little eyes, or elegantly mottled; upper segment entire and truncate; lower bent in: obtusely lobed above and four-cleft, the lower segment somewhat longer. Filaments a little broader at top, crooked at bottom; anthers at first large, turgid, ovate, cloven almost to the base, yellowish and often spotted, afterwards changing both their form and situation in a singular manner: germ rather conical, very hairy; stigma bifid: nectary, a gland surrounding the base of the germ: the lowermost valve of the capsule splits in two. Seeds dark brown, truncate at both ends.

Leaves on footstalks that half clasp the stem, scalloped with deep small notches, and curiously reticulated with fleshy veins on their under surface. The peduncles arise each from a lanceolate entire bract half embracing the stem, and purplish towards the point.

Capsule ovate-pyramidal, subpubescent: valves, when it is ripe often gaping with a chink on the sides. Receptacle fungous, convex on one side, slightly concave on the other, by means of an entire lamina united to the axis of the fruit, but not to the dissepiment. Seeds nearly of a parallelopiped form, marked with a longitudinal groove on one side, sprinkled on all sides with hollow dots in rows, and of a ferruginous colour.

Native of Denmark, Germany, Switzerland, Britain, in sandy and gravelly soils: near London it grows plentifully about Charlton wood, Norwood, &c. It flowers from June to August.

The corolla is in general of a fine purple; but it varies into different shades of that colour, and is frequently white or cream colour. Parkinson (parad.

381, 382. n. 2, 3.) mentions varieties with bluish-coloured and orange-tawny flowers, as well as white, both large and small, n. 4, 5. Some thinking Foxglove to be a foolish name, says Parkinson, do call them *Finger-flowers*, because they are like unto the fingers of a glove, the ends cut off.

The *Digitalis purpurea* or common purple Foxglove has long been considered as a plant possessed of very powerful virtues. A dram taken inwardly excites violent vomitings. It is certainly a very active medicine, and merits great attention; and it is singular that a plant so powerful in its operations should not sooner have been introduced into the modern materia medica. The country people in Somersetshire are said to have long been in the habit of using it, in decoction, in fevers, to purge and vomit, which sometimes arises to a superpurgation. The Italians have a proverb concerning this plant, (by them called *Aralda*,) *Aralda tutte piaghe salda*, Foxgloves cures all sores. Parkinson says that it is effectual in the falling sickness, if two handfuls of it be boiled in ale with four ounces of polypody of the oak, and the decoction drank by the patient: and that they who had laboured under that disease twenty-six years, so that they fell down twice or thrice every month, were perfectly restored by the use of this decoction; and did not fall into a fit for the space of fourteen or fifteen months after. The dried leaves applied, or the juice made into an ointment, has been highly commended in ulcers, king's evil, &c. &c. as well as the bruised flowers also made into an ointment with fresh butter.

The diuretic effects of Foxglove, for which it is now so deservedly celebrated, and on which account, as well as for its other powers, it is so much used in dropsical cases, seems to have been first ascertained by Dr. Withering. Yet he observes that it seldom succeeds in men of great natural strength, tense fibre, warm skin, and florid complexion; or in a tight cordy pulse. If the belly in ascites be tense, hard, and circumscribed, or the limbs in anasarca be solid and resisting, we have but little hope. On the contrary, if the pulse be feeble, or intermitting, the countenance pale, the lips livid, the skin cold, the swollen belly soft and fluctuating, the anasarcaous limbs readily pitting under pressure of the finger, we may expect the diuretic effects to follow in a kindly manner.

In hydrothorax or water in the chest, striking proofs are said to have been afforded of the efficacy of Foxglove. The dose of the dried leaves in powder is from one to three grains a day: but if a liquid medicine be preferred, a dram of the dried leaves is to be infused for four hours in half a pint of boiling water, adding to the strained liquor an ounce of any spirituous water. It is to be continued in these doses till it either acts upon the kidneys, the stomach, the pulse, or the bowels.

2. Stem even, shorter by half than the foregoing. Peduncles villose. Leaves sessile, lanceolate, not wrinkled but even, and almost entire. The flowers are very like those of *D. purpurea* in form, size and colour, but the dots of the palate are more copious and without the pale iris: the upper lip is more deeply two-lobed, the lower very obtuse, and the lateral segments reflex: the anthers have ferruginous dots. It is a native of Spain, and is perennial.

3. This has the appearance of the first sort. The leaves are tomentose, veined, serrate; the lower lanceolate-ovate, the upper broad-lanceolate, all decurrent and having the decurrent sides reflex. The bunch or spike of flowers the same as in *D. purpurea*. The corolla purple with a pale throat over which are sprinkled blood-red dots; border four-cleft, the upper lobe undivided, the lower longer and ciliate. It seems to be a daughter of the first species by *Verbascum Thapsus*.

It seldom rises much more than a foot and half high; the lower leaves are ten inches long, and three broad in the middle. The flowers are smaller than

^a Curtis.

^b Woodw. Mss.

^c Gartner.

^d Linn. mant.

^e Linn. spec.

those of the common sort, and the segments are acute. It grows naturally in Spain, whence Mr. Miller received the seeds. [It was cultivated by him in 1759; flowers from June to August, and is perennial^f.]

4. This has very long obtuse leaves near the root; the stalk is small, and rises from two to three feet high; the lower part of it has smooth leaves growing close together, about three inches long and one inch broad, ending in obtuse points: the upper part of the stalk for ten inches in length, has small yellow flowers, closely ranged on one side of it, having a few very small acute leaves placed between them, situated on the opposite side of the stalk.

[Distinct from the next species, in having the leaves smooth, harder and narrower; the flowers smaller, thicker in the spike, pale not spotted, the segments of the calyx and corolla acute, triangular, those of the latter five almost equal, the upper one manifestly bifid^g.

The spike nods at top from the beginning^h. Leaves lanceolate, half a foot in length, nerved, sessile; the nerves villose underneath. The upper calycine leaf shorter. Calyx, style, germ pubescent with capitate hairsⁱ. Perennial.

Native of France; Switzerland in the government of Aigle, about Geneva; Silesia; Carniola; Piedmont; about Salerno and Naples.—Cultivated in 1629^k. It flowers in July and August.]

5. This has long smooth-veined leaves at bottom; the stalk is strong, two feet and a half high. Leaves five inches long, one inch and a half broad, ending in acute points, having many longitudinal veins, and being slightly ferrate; the upper part of the stalk is adorned with large yellow flowers, nearly of the same size with those of the first sort; the brim having acute points, and the upper lip being entire.

[It differs from the foregoing in having the flowers much larger; though scarcely different in species, yet all writers choose to distinguish it principally on this account^l.

It is distinguished from the foregoing by the leaflets of the calyx being more acuminate; the corollas larger, swelling at bottom, ochroleucous, dotted on the inside with brown^m.

It is more tender than the first species, and somewhat viscid. The stem is two feet high and subpubescent. The leaves smooth on their upper surface, subpubescent on their lower, without any of the anastomosing veins, the edge very slightly and sharply ferrate. The raceme nodding at top; bractes narrower and more obtuse; corolla a little smaller, very softly pubescent, pale yellow, hairy within, and spotted with brown, the upper lip very short, very obtuse, cloven, the lateral and lower divisions acute; style straight; stigma bifid, convergent. Capsules all on one side, remote, ovate-oblong, acuminate, twice the length of the calyxⁿ.

Native of Germany, Switzerland, Geneva, Austria, Piedmont; flowering with the former.—Cultivated in 1596, by Gerarde^o.

6. Stem strict, even, six feet high. Leaves sessile, lanceolate, even, marked with lines, quite entire. Flowers in an upright raceme from each of the upper axils: bractes linear-lanceolate, reflex: pedicels very short, solitary: the three upper leaves of the calyx approximating: corolla a little longer than the calyx, pubescent, yellowish within, the two upper divisions obscure, the side ones sharp, the lowest longer: stamens flexuose, without any rudiment of a fifth: style the length of the flower. Perennial^p.

Leaves beneath hairy and hirsute, whitish, the ribs sharp and nerved, above smooth and dark green, on the edge having a few small teeth. The whole corolla subhirsute. Style the length of the stamens, but as the flower decays extended beyond the calyx. Height of the plant three feet^q.]

Stem near six feet high, putting out some slender branches towards the bottom, where it has narrow

small leaves, three inches long and one third of an inch broad. The flowers terminate the stem in a very long spike or raceme, having a few very small leaves between them: the corolla has the colour of rusty iron, and expands in June, [or July.

Native of Italy and about Constantinople. Cultivated in 1597^r.

7. Stem undershrubby, with a few opposite branches. Leaves, when it does not flower, crowded, but on the flowering stem alternate. Flowers on terminating racemes: bractes lanceolate: calycine leaflets ovate, acutish, patulous: corollas drooping, obtuse, yellowish within, reticulated and rufous at bottom; pale rufous on the outside, especially at the back; upper lip half cloven and recurved, lower three-parted the middle part a little longer than the others.

Native of Spain^s. Introduced about 1778. It flowers in July and August^t.]

8. This plant has a shrubby stalk, four and sometimes five or six feet high, dividing into several branches. Leaves lanceolate, rough, near five inches long, and two broad in the middle, gradually decreasing to both ends, having a few short serratures on their edges, placed alternately on the branches, each of which is terminated by a loose spike of flowers, near a foot in length: they are of an orange-colour intermixed with yellow, and are shaped somewhat like the flowers of *Acanthus*.

It grows naturally in the Canary islands, whence the seeds were first brought to England, and many of the plants were raised, in the Bishop of London's garden at Fulham, part of which were sent to the royal gardens at Hampton Court, and into Holland.

[It was also cultivated in 1698, by the Dutchess of Beaufort^u.

9. This is a very handsome plant. The branches are rough with hairs: Leaves approximating, near a foot in length, sessile, gradually dilated from the base into an oblong form, ferrate in the middle, acuminate, smooth on the upper surface, rough with hairs and whitish on the lower. Peduncle terminating the branch, solitary, round, upright, a hand or more in length, porous on the inside, ending in an ovate spike with the flowers hanging down. Bractes before the flowers open form a coma. Calycine leaflets hirsute. The corolla is nearly of the same size as in *D. ferruginea*, gibbous below, the border four-cleft, the lip obtuse.

Native of Madeira, in woods, where it was found by Masson^v.—Introduced in 1777. It flowers in July and August^w.]

10. Root-leaves many, smooth; among these arises the stalk about a foot high; the leaves on it are smooth, from four to five inches long, and one inch and a half broad in the middle, half-stem-clasping. Spike of flowers terminating, short, loose. Corollas yellow, almost as large as those of n. 9., but shorter. It flowers in May, and the seeds ripen in autumn.

It grows naturally in Tartary, whence the seeds were sent to the imperial garden at Petersburg, and thence to Mr. Miller, who cultivated them in 1759.

[11. Stem herbaceous, a foot and half high, almost upright. Leaves quite entire, opposite. Flowers sessile: calyx five-cleft: corolla pale violet, bell-shaped, ventricose at bottom, five-cleft, the segments obtuse, the uppermost emarginate. Capsule ovate, acute, two-celled.

Native of Cochinchina.

12. Stem caespitose, erect, a foot high, round, smooth. Leaves acute, ferrate, opposite, on short petioles. Segments of the calyx five, erect, the uppermost larger, sometimes bifid. Corolla dusky purple, bell-shaped, ventricose, four-cleft, the upper segment larger than the rest. Stigma screw-shaped. Capsule ovate-conic, two-grooved, two-celled.

Native of China^x.]

^f Hort. kew. ^g Haller. ^h Linn. spec. ⁱ Scopoli.
^k Park. parad. ^l Linn. syst. ^m Krock. ⁿ Leers.
^o Hort. kew. ^p Linn. syst. ^q Allioni.

^r Gerarde's herb. ^s Linn. spec. & mant. ^t Hort. kew.
^u Ibid. ^v Linn. suppl. ^w Hort. kew. ^x Loureiro.

PROPAGATION AND CULTURE.

If the seeds of the first sort are permitted to scatter, the plants will come up in the spring, and require only to be weeded out where they are too numerous. The seeds of this and of the other sorts should be sown in autumn, for those which are sown in the spring seldom succeed, or at least lie a year in the ground before they grow.

8. This plant begins to flower in may, and there is generally a succession of flowers on the same plant, till the winter puts a stop to them, which renders the plant more valuable. It is propagated by seeds, which should be sown in pots filled with light earth, in the autumn, soon after the seeds are ripe; these pots should be plunged into an old bed of tanners bark, whose heat is gone, and in mild weather the glasses should be drawn off to admit the air; but in hard rains and frost they must be kept on, to protect the seeds from both, which frequently destroy them here when they are exposed; in the spring the plants will come up, when they should enjoy the free air in mild weather, but must be protected from the cold. When these are large enough to transplant, they should be each planted into a separate small pot filled with light earth, and placed under the frame till they have taken new root, then they should be gradually inured to the open air. During the summer season the plants should remain abroad in a sheltered situation, but in the winter they must be placed in a green-house, for they will not live abroad in England; they must not be kept too warm and close in the house, for they only want protection from the frost; therefore in mild weather, they should have free air constantly admitted to them, and they require frequent waterings, but they should not have it in too great plenty in winter.

[9. The ninth must have the same treatment.

DIGITALIS. See *Chelone*, *Dracocephalum*, *Gerardia*, *Mimulus*, *Sesamum*.

DIGITARIA. See *Panicum*.

DILATRIS,

Lin. gen. edit. Schreb. n. 82. Berg. cap. 9. Thunb.

Lin. suppl. 10. Juss. 59.

Class. 3. 1. Triandria Monogynia.

Nat. order of *Ensatæ*.—*Irides* Juss.

GENERIC CHARACTER.

CAL. none.

COR. six-petalled, superior. *Petals* ovate-lanceolate, concave, from erect-spreading, equal, hirsute on the outside, permanent.

STAM. *Filaments* three subulate, shorter than the corolla, the third less than the other two. *Anthers* ovate-lanceolate, two-furrowed; that on the smaller filament larger.

PIST. *Germ* inferior. *Style* filiform. *Stigma* simple, obtuse.

PER. *Capsule* globular, extremely hirsute, three-celled, three-valved.

SEEDS solitary, orbicular, compressed, smooth, perpendicular.

ESSENTIAL CHARACTER.

Cal. none. *Cor.* six-petalled hirsute. *Filaments* one less than the others. *Stigma* simple.

SPECIES.

1. *Dilattris umbellata*.

Lin. syst. 93. suppl. 101. Berg. cap. 9. t. 3. f. 5.

Wachendorfia umbellata. Lin. syst. ed. 13. 80. Reich. 112. mant. 320.

Ixia hirsuta. Lin. mant. 27. 511.

Petals ovate; *corymb* fastigiate hirsute.

2. *Dilattris viscosa*.

Lin. syst. 93. suppl. 101.

Petals linear, *corymb* fastigiate villose, viscid.

3. *Dilattris paniculata*.

Lin. syst. 94. suppl. 101.

Petals lanceolate, *panicle* oblong villose viscid.

DESCRIPTIONS, &c.

1. The whole plant hoary and very villose except the inside of the flower. Root fibrous. Root-leaves like those of *Cyperus*, even, erect, strict; one or two only on the stem, lanceolate, short. Umbel

(or corymb) regular: universal involucre six-leaved, lanceolate, short; peduncular rays about six, two-parted, with a racemed arm on each side; flowers alternate, ascending, pedicelled: corolla smoothish within, dark purple: stamens the length of the petals; anthers equal: stigma three-cornered^a.

2. Of this species we have no description.

3. Flowers yellowish-purple^b.

All these are natives of the Cape of Good Hope, and were detected there by Chevalier Thunberg.

PROPAGATION AND CULTURE.

See *Wachendorfia*.

DILL. See *Anethum*.

DILLENIA. (So named by Linneus in honour of John James Dillenius, the famous professor of botany at Oxford, author of *Historia Muscorum*, *Hortus Elthamensis*, &c.)

Lin. gen. n. 688. Reich. 745. Schreb. 939. Linn. trans. 1. 199. Juss. 281.

Class. 13. 7. Polyandria Polyginia.

Nat. order of *Coadunatæ*? *Magnoliæ* Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-leaved: leaflets obovate, obtuse, concave, leathery, smooth within, villose without, permanent.

COR. *Petals* five, obovate, narrowed at bottom, very blunt, very finely subcrenate, somewhat concave, longer than the calyx, deciduous.

STAM. *Filaments* scarcely any. *Anthers* very numerous, inserted into the base of the germ, linear, orange with a black line, shorter than the calyx.

PIST. *Germ* superior, ovate. *Styles* several, erect, simple, longer than the anthers. *Stigmas* simple.

PER. roundish, outwardly coated with as many oblong capsules, which are longitudinal, and divided by a furrow; inwardly by a columnar, very large pulpy receptacle.

SEEDS numerous, very small, nestling under the capsules.

ESSENTIAL CHARACTER.

Cal. five-leaved. *Pet.* five. *Caps.* many-seeded, connate, filled with pulp.

SPECIES.

1. *Dillenia integra*.

Thunb. in Linn. trans. 1. p. 199. t. 18.

Leaves obovate obtuse almost entire; *peduncles* one-flowered.

2. *Dillenia speciosa*.

Thunb. in Linn. trans. 1. p. 200.

D. indica. Lin. spec. 754. syst. 507. Reich. 2. 624. hort. cliff. 221.

Syalita. Rheed. malab. 3. 39. t. 38, 39. Raii hist. 1707. Pluk. mant. 124. Burm. ind. 124.

Leaves oblong, rounded-acute, toothblotted; *peduncles* one-flowered.

3. *Dillenia elliptica*.

Thunb. in Linn. trans. 1. p. 200.

Songium. Rumph. amb. 2. p. 140. t. 45.

Leaves elliptic-ovate acute serrate, *peduncles* one-flowered.

4. *Dillenia retusa*.

Thunb. in Linn. trans. 1. p. 200. t. 19.

Leaves obovate truncate serrate, *peduncles* one-flowered.

5. *Dillenia serrata*.

Thunb. in Linn. trans. 1. p. 201.

Sangius. Rumph. amb. 2. 142. t. 46.

Leaves elliptic-ovate acute serrate, *peduncles* three-flowered.

6. *Dillenia dentata*.

Thunb. in Linn. trans. 1. p. 201. t. 20.

Wormia triquetra. Rottb. in nov. act. Hafn. 2. p. 532. t. 3.

Leaves ovate retuse toothed, *peduncles* three-flowered.

7. *Dillenia pentagyna*.

Roxb. Coromand. p. 21. pl. 20.

Leaves ovate-lanceolate, serrate, sharp, flowers pentagynous.

^a Linn.

^b Linn. suppl.

DESCRIPTIONS, &c.

These are beautiful trees, natives of the East Indies: the leaves are large and of a leathery substance: the flowers are axillary or terminating, sometimes very large; the fruit approaches to that of Clusia. Jussieu doubts whether this genus may not be allied more nearly to the natural order of Guttiferæ than of Magnoliæ, in which he has placed it, although the leaves be alternate^a.

1. Branches alternate, wrinkled, dusky, smooth. Leaves ferrulate from the middle to the end; the ferrulations however are scarcely visible; they are smooth on both sides, paler underneath, nerves alternate, parallel, curved up, with a very fine net of veins between, spreading, about a span in length, and a hand in breadth. Petioles semicylindric, channelled, villose, an inch long. Flowers terminating on the extreme branchlets, subsolitary, peduncled.

Native of the island of Ceylon, named there *Gudapara* and *Runumidale*.—A decoction of the leaves is used by the inhabitants for cleansing foul ulcers^b.

2. This is a lofty tree, with thick wrinkled ash-coloured smooth branches. Leaves obtuse with a point, waved and toothletted, with parallel nerves almost opposite, the upper surface smooth, the lower obscure, brownish, about a foot in length, and a hand in breadth. Petioles thick, scarcely an inch in length. Flowers on the branchlets terminating.

Found, according to Rheede, in Malabar, by Thunberg in Java^c.

3. Leaves petioled, acuminate, with opposite parallel nerves. Flowers terminating.

Native of Amboina, Celebes and Macassar, according to Rumphius^d.

4. Branches alternate, wrinkled, dusky, smooth. Leaves approximating, drawn to a point at bottom, entire, remotely ferrate at top with obsolete serratures, truncate and subretuse at the end, smooth on both sides, nerves parallel, alternate, curved up, with a fine net of veins between them, spreading, almost a hand wide and twice that length. Petioles semicylindric, channelled, hirsute at the base, scarcely an inch long. Flowers terminating.

Native of Ceylon, in woods^e.

5. Leaves petioled, finely ferrate, nerves almost opposite or alternate, parallel. Flowers on lateral peduncles, by threes, pedicelled.

Native of Celebes, Macassar and Java, according to Rumphius^f.

6. Branches alternate, wrinkled, ash-coloured, smooth. Leaves very obtuse or emarginate-retuse, entire at bottom, toothed towards the upper part and at the end, nerves almost opposite, parallel, directed upwards, smooth on both sides, darker-coloured underneath, a hand in length. Petioles angular, smooth, a little shorter than the leaf. Flowers on the branches, terminating, racemed, three or thereabouts together. Pedicels alternate, smooth, half an inch long^g. According to Vahl, the peduncles are frequently from four to eight-flowered, branching at the base.

Native of Ceylon, where it is known by the name of *Diapara*^h.

7. This is a large tree, with numerous ascending branches. Leaves alternate, petioled, about the extremities of the branchlets, oblong, pointed, sharp-sawed, having large elevated parallel veins, smooth, shining, except when very young, then downy, from twelve to twenty inches long, and from four to six broad. Peduncles collected in bundles from tuberosities over the naked wood of the two or three year old branchlets, erect, round, smooth, two inches long, undivided, one-flowered. Flowers middle-sized, yellow. Petals oblong. Filaments many; anthers sword-shaped. Germs five, short. Stigmas lanced, spreading. Pericarp pendulous, size of a small nutmeg. Seeds reniform.

^a Juss. gen. ^b Thunb. in Linn. trans. ^c Ibid. ^d Ibid.
^e Ibid. ^f Ibid. ^g Ibid. ^h Ibid.

It is a native of the mountainous parts of Coromandel, where it flowers in march and aprilⁱ.

DIMORPHA. (From *dis* twice, and *μορφη* form.)

Lin. gen. Schreb. n. 1179. Parivoa. Aubl. 303.

Juss. 350. Eperua. Aubl. 142. Juss. 349.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceæ* or *Leguminosæ*.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, rounded at the base, deeply three or four-cleft, obtuse.

COR. *Petal* very wide, ventricose, convolute at the sides, crenulate, inserted into the calyx below the stamens, placed at the lower side.

STAM. *Filaments* diadelphous, (single at the opening of the petal, and nine-cleft incumbent on the middle of the petal,) ascending, longer than the corolla. *Anthens* paralleliped, incumbent.

PIST. *Germ* pedicelled, compressed, short. *Style* longer than the stamens. *Stigma* simple.

PER. *Legume* large, oblique, compressed, one-celled.

SEED single or few.

OBS. *Petal* single, as in *Amorpha*, but occupying the place of the keel; the wings and standard are wanting.

Parivoa, Aubl. has an obovate one-seeded legume.

Eperua, Aubl. has the filaments thickened at the base and villose, (in the figure, five only have anthers;) legume sabre-shaped, with three or four seeds in it.

ESSENTIAL CHARACTER.

Petal one large convolute, in place of the keel. Standard and wings none.

SPECIES.

1. *Dimorpha falcata*.

Eperua. Aubl. pl. gui. 1. p. 369. t. 142.

Leaves pinnate, *Pods* falciform.

2. *Dimorpha grandiflora*.

Parivoa grandiflora. Aubl. pl. gui. 2. p. 757. t. 303.

Flowers larger than in the other species.

3. *Dimorpha tomentosa*.

Parivoa tomentosa. Aubl. pl. gui. 2. p. 159. t. 304.

Legume tomentose.

DESCRIPTIONS, &c.

1. A tall tree, upwards of sixty feet high, very much branched at top, and branches much scattered. Leaves alternate, pinnate, commonly three on a side; ovate-oblong, sharp-pointed. Flowers numerous, spiked. Spikes alternate, extremely long, pendulous, axillary, and terminal.

Native of woods in Guiana; flowering in september.

2. A large tree, with a trunk more than two feet in diameter. Leaves winged and alternate, leaflets opposite, each pair at a distance from the other, entire, ovate-lanceolate, sharp-pointed. Flowers purplish, large, borne in clusters. The wood of this tree is reddish, solid and compact, and is used for various important purposes.

It is found in Guiana, and flowers in september.

3. A tree upwards of twenty feet high, very much branched at top; and branches much scattered. Leaves alternate, pinnated, with two or three alternate leaflets. Flowers scattered, terminal, axillary.

Flowers in september, and grows near the banks of rivers in Guiana^k.

DIMORPHOTHECA. See *Calendula*.

DIODIA. (*Διόδιος*, *subviatica*; from its growing by way sides.)

Lin. gen. n. 122. Reich. 129. Schreb. 158.

Gronov. Gartn. t. 25. Juss. 197.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Stellatæ*.—*Rubiaceæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* two-leaved: (two or four-leaved, G.) leaflets subovate, superior equal, permanent: (two larger, the length of half the fruit. G.)

COR. one-petalled, funnel-form. Tube slender, long. Border small, spreading, four-parted: divisions lanceolate.

ⁱ Roxb. corom.

^k Aublet.

STAM. Filaments four, bristle-shaped, upright. *Antibers* versatile.

PIST. Germ roundish, four-sided, inferior. Style filiform, length of the stamens. Stigma two-cleft.

PER. Capsule ovate, four-cornered, crowned, larger than the calyx, two-celled, two-valved: (valveless, bipartite, eight-furrowed, G.)

SEED solitary, ovate-oblong, even, convex on one side, flat on the other; shining: (with two furrows and a ridge between them, G.)

ESSENTIAL CHARACTER.

Cor. one-petalled, funnel-form. Caps. two-celled, two-seeded.

SPECIES.

1. *Diodia virginica*.

Lin. spec. 151. syst. 149. Reich. 298. hort. cliff. 493. Gœn. virg. 71. Gertn. fruct. 121. Swartz prodr. 151.

Stem branching procumbent smooth and even.

2. *Diodia simplex*.

Swartz prodr. 29.

Stem herbaceous simple almost erect smooth and even, leaves ovate-lanceolate.

3. *Diodia prostrata*.

Swartz prodr. 30.

Diodioides. Lœfl. itin. 201.

Stem suffruticose subdivided, branches prostrate filiform, leaves linear somewhat hirsute revolute.

4. *Diodia scandens*.

Swartz prodr. 30.

Stem scandent suffruticose, leaves ovate-lanceolate rigid rugged.

5. *Diodia farmentosa*.

Swartz prodr. 30.

Stem flaccid shrubby, branches opposite spreading, leaves oblong acute somewhat rugged.

6. *Diodia verticillata*.

Vahl symb. 2. 28.

Smooth, leaves lanceolate in whorls rugged at the edge, stem herbaceous erect.

DESCRIPTIONS, &c.

1. Stems procumbent, red; branches alternate. Leaves opposite. Flowers white^a. The calyx in some is two-leaved only, in others unequally four-leaved; that is with two very minute leaves placed in the interstices of the larger, and this even seems to be the more natural number. Capsule small, of a pale bay colour, the surface often chagreened with very minute linear acuminate chaffy white squamules, especially towards the end; but which, when the fruit is ripe, are easily wiped off, so that it is usually smooth. Receptacle none; the seeds being fixed to the middle of the partition; these are blackish^b.—Native of Virginia.

2, 3, 4, 5. Natives of the West Indies. The second, third and fifth of Jamaica, and the fourth of Hispaniola^c.

6. Stem simple, a foot high, smooth, as is also the whole plant, even. Leaves sessile, from five to eight in each whorl, unequal, without any visible veins or nerves, not marked with lines, very rugged about the edge, connected by a stipulaceous ciliate membrane. Flowers several together in whorls, inclosed by the stipule; the terminating whorl larger than the others. Capsule two-celled, linear, somewhat compressed, ciliate on both sides at top, crowned with two teeth. Seed single in each cell, linear.

Native of the island of Santa Cruz; sent by Pflug^d.

DIONÆA. (One of the names of Venus; from her mother Dione. A genus constituted by Ellis.)

Lin. gen. Reich. n. 584. Schreb. 729. Ellis monogr. Juss. 431.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Gruinales*.

GENERIC CHARACTER.

CAL. Perianth five-leaved, upright; leaflets oblong, acute, permanent.

COR. Petals five, sessile, oblong, obtuse, concave.

^a Linn. syst.

^b Gœrtner.

^c Swartz.

^d Vahl.

STAM. Filaments ten, subulate, shorter. *Antibers* roundish, pollen tricoccus.

PIST. Germ roundish, depressed, crenate. Style filiform, shorter than the filaments. Stigma spreading, fringed on the edge.

PER. Capsule one-celled, gibbous.

SEEDS very many, subovate, very small, affixed to the base of the capsule.

OBS. The number of stamens is not always constant.

ESSENTIAL CHARACTER.

Cal. five-leaved. Pet. five. Caps. one-celled, gibbous, containing many seeds.

SPECIES.

1. *Dionæa Muscipula*. Venus's fly-trap.

Lin. syst. 403. Reich. 281. mant. 238. æt. upf. nov. 1. 98. t. 8. Ellis monogr. fig. 3 descr. Sharw nat. misc. t. 40.

DESCRIPTION, &c.

Root squamous, sending forth but few fibres, like those of some bulbs, and perennial. Stalk about six inches high, round, smooth, without leaves, ending in a spike of flowers. Leaves many, inclining to bend downwards, and placed in a circular order, jointed, succulent; the lower joint, which is a kind of stalk, is flat, longish, two-edged, and inclining to heart-shaped. In some varieties they are ferrate on the edges near the top: the upper joint consists of two lobes, each semi-oval, the margins furnished with stiff hairs like the eye-lashes, embracing or locking into each other when they close: this they do when they are irritated within; the upper surface of these lobes is covered with small red glands, appearing, when highly magnified, like the fruit of the *Arbutus* compressed: among the glands, about the middle of each lobe, are three very small erect spines; when the lobes inclose any substance, they never open again while it continues there; if it can be shoved out so as not to strain the lobes, they expand again, but if force be used to open them, so strong has nature formed the spring of their fibres, that one of the lobes generally snaps off rather than yield. Flowers milk-white, on peduncles, with a little pointed bracte at the bottom of each^e.

What Ellis calls the lower joint of the leaf, Linneus looks upon as the petiole winged in the same manner as in the Orange. The stem is a scape. The flowers grow in a corymb resembling an umbel: the petals are marked with seven streaks and bend in at the end. Linneus affirms that when the entrapped insect ceases to struggle, and is quiet, the leaf opens and permits it to escape. This does not agree with Ellis's account: for he affirms that the lobes never open again, so long as the animal continues there. He thinks it probable that a sweet liquor discharged by the red glands tempts the insect to its destruction. He adds, that if a straw or a pin be introduced between the lobes, they will grasp it as fast as if it were an insect.

A specimen of this singular plant was first sent to Mr. Ellis in the year 1765, by Mr. Peter Collinson; and he received it from Mr. John Bartram of Philadelphia, botanist to the King. But we are indebted to Mr. William Young, a native of Philadelphia, for the introduction of it alive, and in considerable quantities^f. This, according to the Kew catalogue, was in 1768.

It is a native of the swamps of North Carolina, near the confines of South Carolina, about the latitude of 35°. N., where the winters are short, and the summers very hot; it flowers there in July and August.

The plants introduced by Mr. Young were all lost: and this singular plant was again brought into our gardens in 1789; but it will be difficult long to preserve a swamp plant from Carolina.

PROPAGATION AND CULTURE.

Being a swamp plant, a north-east aspect will be the properest to plant it in, to keep it from the direct rays of the meridian sun; and in winter, it will be necessary to shelter it with a bell-glass; which

^e Ellis.

^f Ibid.

should be covered with straw or a mat in hard frosts. Its sensitive quality will be in proportion to the heat of the weather, as well as the vigour of the plant.

It may also be planted in pots of light moorish earth, for in such the plants come over mixed with white sand, and placed in pans of water, in an airy stove; where the heat of such a situation, being like that of its native country, will make it surprizingly active.

Our summers are not warm enough to ripen the seed^a.]

DIOSCOREA. (So named in honour of Pedacius Dioscorides, of Anazarbaea, who is supposed to have lived in the time of Nero. He is author of a large treatise on the Materia Medica in Greek.)

Engl. Yam. Fr. Igame.

Lin. gen. n. 1122. Reich. 1227. Schreb. 1530.

Plum. gen. 26. Gertn. t. 17. Juss. 42.

Class. 22. 6. Dioecia Hexandria.

Nat. order of Sarmenaceae. Asparagi. Juss.

GENERIC CHARACTER.

* Male.

CAL. Perianth one-leafed, bell-form, six-parted; divisions lanceolate, spreading at top.

COR. none; unless you take the calyx for it.

STAM. Filaments six, capillary, very short. Anthers simple.

* Female.

CAL. Perianth as in the male.

COR. none.

PIST. Germ very small, three-sided. Styles three, simple. Stigmas simple.

PER. Capsule large, triangular, three-celled, three-valved.

SEEDS in pairs, compressed, girt with a large membranous border.

OBS. The large compressed cavity of the albumen, is peculiar to the seeds of this genus and Rajania. Gertn.

ESSENTIAL CHARACTER.

MALE. Cal. six-parted. Cor. none.

FEM. Cal. six-parted. Cor. none. Styles three. Caps. three-celled, compressed. Seeds two, membranaceous.

SPECIES.

1. Dioscorea pentaphylla.

Lin. spec. 1462. Reich. 4. 260. hort. cliff. 459.

Fl. zeyl. n. 363. Rumph. amb. 5. t. 127. Rheed.

mal. 7. 67. t. 35. Raii suppl. 133. (Battata.)

D. digitata. Mill. dict. n. 6.

Leaves digitate.

[2. Dioscorea triphylla.

Lin. spec. 1462. Reich. 4. 260. hort. cliff. 459.

Gertn. fruct. 66. Rumph. amb. 5. t. 128. Rheed.

mal. 7. 63. t. 33. Raii suppl. 133.

Leaves ternate.

3. Dioscorea trifida.

Lin. syst. 888. suppl. 427.

Leaves cordate trifid.

4. Dioscorea aculeata.

Lin. spec. 1462. Reich. 4. 260. hort. cliff. 459.

Lour. cochinch. 625. Burm. ind. 214. Rumph.

amb. 5. t. 126. Rheed. mal. 7. 71. t. 37. Raii

suppl. 133.

Leaves cordate, stem prickly bulb-bearing.]

5. Dioscorea alata. Wing-stalked Dioscorea.

Lin. spec. 1462. Reich. 4. 260. fl. zeyl. n. 360.

Brown. jam. 359. 2. Sloan. jam. 1. 139. (Volu-

bilis). Rheed. mal. 7. 71. t. 38. Raii suppl.

134. Lour. cochinch. 623. Rumph. amb. 5.

t. 120—123, 125.

Ricophora 1. Mill. dict. edit. 3. vol. 2. addenda.

Leaves cordate, stem winged bulb-bearing.

6. Dioscorea bulbifera.

Lin. spec. 1463. Reich. 4. 261. hort. cliff. 459.

fl. zeyl. n. 359. Rumph. amb. 5. t. 154. Rheed.

mal. 7. 69. t. 36. Herm. par. t. 217. Pluk. alm.

t. 220. f. 6. (Rhizophora). Raii suppl. 133.

(Battata.)

Leaves cordate, stem even bulb-bearing.

^a Ellis.

7. Dioscorea fativa. Cultivated Dioscorea, or Yam.

Lin. spec. 1463. Reich. 4. 261. hort. cliff. 459.

t. 28. fl. zeyl. n. 358. Brown. jam. 360.

Gertn. fruct. 66. Rumph. amb. 5. t. 180. Rheed.

mal. 8. t. 51. Plum. ic. t. 117. f. 1. Sloan.

jam. 1. 140. (Volubilis). Raii. suppl. 134.

Leaves cordate alternate, stem even round.

8. Dioscorea villosa. Hairy Dioscorea.

Lin. spec. 1463. Reich. 4. 261. Rumph. amb. 5.

t. 162? Gron. virg. 121. 156. Plum. ic.

t. 117. f. 2? (Polygonum). Pluk. alm. t. 375.

f. 5. (Bryoniae fim.)

Leaves cordate alternate and opposite; stem even.

9. Dioscorea oppositifolia.

Lin. spec. 1463. Reich. 4. 261. fl. zeyl. n. 361.

Rumph. amb. 5. t. 122. Pet. gaz. t. 31. f. 6.

Lour. cochinch. 624.

Leaves opposite ovate acuminate.

[10. Dioscorea septemloba.

Lin. syst. 889. Thunb. jap. 149.

Leaves cordate seven-lobed seven-nerved.

11. Dioscorea quinqueloba.

Lin. syst. 889. Thunb. jap. 150. Kämpf. ic. select.

t. 15.

Leaves cordate five-lobed nine-nerved.

12. Dioscorea japonica.

Lin. syst. 889. Thunb. jap. 151.

Leaves cordate acuminate nine-nerved.]

13. Dioscorea hastata.

Mill. dict. n. 2.

D. scandens, fol. hast. fructu racemoso. Houst. Mss.

Leaves hastate, stem even, racemes very long.

[14. Dioscorea eburina.

Lour. cochinch. 625. Burm. ind. 215? (Cylindrica).

Rheed. mal. 7. 95. t. 50. (Kappa Kelengu).

Leaves heart-shaped seven-nerved alternate, flowers hermaphrodite in simple long racemes.

15. Dioscorea cirrhosa.

Lour. cochinch. 625.

Leaves ovate-lanceolate three-nerved, flowers hermaphrodite three-stamened, stem cirrhose.

DESCRIPTIONS, &c.

Roots usually tuberous. Stem twining from right to left. Flowers axillary, in spikes or racemes. Perennial.

1. Root very large and thick. Stalks spiny, slender. Leaves quinate, flat, smooth, thin, on petioles striated within: the midrib puts out several transverse nerves, and these others covering the back as it were with a net. Flowers first yellow, then turning blackish^a.

Native of the East Indies and the Society Isles.

2. This is very nearly allied to the foregoing, and it may be doubted whether it be a distinct species^b.

The stalks are round, slender, smooth, spiny. Leaves above dusky green, beneath smooth and shining, with whitish prominent nerves, on long petioles^c.

Capsule two inches long, from an emarginate and a kind of cordate base prolonged into an elliptic form, and contracted at top into a short dagger point; otherwise it resembles that of *D. fativa*, except that it is much stiffer. Seeds in pairs, semi-elliptic, about an inch long, of a cinnamon colour^d.

Native of Malabar.

3. Stem winged bearing tubers. Leaves nerved, semitrifid or palmate, the side lobes next the petiole much emarginate and produced behind into sinuous lobes.

Native of Surinam^e.

4. Stem suffruticose, twining, round, slender, very much branched: with many straight, short, scattered prickles. Leaves ovate, five-nerved, smooth, alternate, on long slender petioles. Flowers in long, spiked, lateral racemes. The calyx has from three to six acute, very short, unequal, spreading leaflets. The corolla has six ovate, concave petals, almost closed, and of a dusky purple colour. Filaments awl-shaped, equal to the corolla, with roundish

^a Hort, malab.

^b Linn. spec.

^c Hort. malab.

^d Gärtner.

^e Linn. suppl.

anthers. Germ inferior. The root is an oblong, esculent tuber, white within, pale yellow without, surrounded with short fibres^f.

Native of Malabar and Cochinchina.

5. Stem furnished with longitudinal membranes, like *Convolvulus Turbith*. Leaves very deeply cordate, smooth, three-nerved, almost twice as long as they are broad, acuminate^g.

Root a foot or more long, as big as a man's leg or thigh, brown on the outside; within white or reddish purple, viscid, but when boiled very mealy. Stalk the bigness of a goose-quill, square, with a thin reddish membrane at each corner, winding itself round poles nine or ten feet high, and putting out leaves at every three inches distance, opposite, on square winged footstalks two inches long. Leaves two inches and a half long, an inch and three quarters broad at the base, almost heart-shaped, pointed, yellowish green, having many ribs arising from the end of the footstalk with transverse ones between. Peduncles axillary an inch or more in length, with small flowers of a yellowish green colour^h.

Native both of the East and West Indies, and cultivated there for food as well as the sixth and seventh species.

5. This species indeed has a better claim, as Forster observes, to the name of *sativa* than the seventh; for it is universally cultivated in the East and West Indies, in Africa, and in all the islands of the Southern ocean, within the torrid Zone, and even as far as New Zealand. The roots are frequently three feet long, and weigh thirty pounds. In all the islands of the South Sea, this Yam is known by the Malay name *Ufi* or *Ubi*. The Portuguese call this root *Inhame*, hence the French *Igname*, and our *Yam*.

Cultivated here in 1739, by Mr. Millerⁱ.

6. Stalks slender, somewhat woody, twining round each other. Leaves on long petioles, which are angular, grooved within, somewhat protuberant at the base; they are oblong, soft, smooth, thin, stretched out longer on one side than the other; the midrib sends out four annular nerves, prominent on the lower surface^k.

The leaves have many nerves and are acuminate. From the axils grow tubers which take root^l.

Native of both East and West Indies, and the islands of the South Seas.—Mr. Miller calls this the Yam, and quotes the synonym of Sloane, with winged stalks, whereas the stalks of this species are even.]

7. This has slender stalks, climbing to the height of eighteen or twenty feet. The leaves have five longitudinal veins, which arise from the footstalks, and diverge towards the sides, but meet again at the point; they stand upon pretty long footstalks, and from the base of these arise the branching spikes of flowers, which are small and have no beauty.

[Leaves smooth, acute, nerved, soft, equal in length and breadth^m.

Root a foot broad and flatter than in n. 5. almost palmated like some Orchises, dirty brown on the outside. Stalks not winged but roundⁿ.—If it be Sloane's plant, it is the Negro Country Yam, which he says is much planted in Jamaica.

Browne calls it the Wild Yam (if it be his third species and not rather his first), and says that it is not put to any use in Jamaica. He refers to *Fagopyrum scandens*, &c. of Sloane 138.—There is much confusion in the synonyms.

Capsule obovate-rounded, leathery, three-sided, compressed into three wings, valves opening along the edge of the wings, accompanied in the middle with a very narrow partition, to the inner edge of which the seeds are fixed; these are irregularly triangular or roundish, and of a brownish red colour^o.

Native of the East and West Indies, and Japan. Mr. Miller received the seeds from Jamaica by Dr. Houstoun, before the year 1733.

^f Loureiro. ^g Linn. zeyl. ^h Sloane. ⁱ Hort. kew.
^k Hort. malab. ^l Linn. zeyl. ^m Ibid. ⁿ Sloane.
• Gærtner.

The Yam is largely cultivated for food in Africa and the East and West Indies, especially in the latter for the negroes. The roots grow to a great size, are mealy, and esteemed to be easy of digestion; they are palatable, and not inferior to any roots now in use, either for delicacy of flavour or nutriment. They are eaten instead of bread, either roasted on the embers or boiled; the flower is also made into bread and puddings.

In Otaheite they make a dish which they esteem very delicious, from the roots of the Yam, with the kernel of the Coco nut scraped, and the pulp of the Musa or Banana. The juice of Yam roots fresh is acrid, and excites an itching on the skin. There are many varieties of these roots, some spreading out like the fingers (Rumph. t. 121.), others twisted like a serpent (Rumph. t. 122.), others again very small, scarcely weighing more than a pound, with a whitish ash-coloured bark, whereas the bark is commonly black. The flesh of the Yam is white or purplish, and viscid, but becomes farinaceous or mealy when dressed. The varieties above-mentioned occurred to our circumnavigators in the island of Otaheite, and belong rather to the fifth species^p: there are doubtless many varieties of a plant so generally cultivated.]

8. This has broad, round, heart-shaped leaves, which end in acute points; they have many longitudinal veins, which arise from the footstalk, and diverge to the side, but afterwards join at the point. The flowers come out on long loose strings, on short pedicels.

[Native of Florida and Maryland, Cultivated 1759, by Mr. Miller^q.

9. This has the appearance of a *Smilax*. Stem round, woody, twining, unarmed. Leaves three-nerved, quite entire, smooth, petioled, pendulous. Racemes of male flowers axillary, opposite, solitary, subvillose, composed of three cylindric aments; the flowers are almost sessile^r.—Mr. Miller seems to confound this with the foregoing.

Native of the East Indies, Japan, and Cochinchina, where the roots are preferred to all others. Loureiro doubts whether this be different from the twelfth.

10. The whole plant smooth. Stem round, climbing. Leaves alternate, entire, even, a hand long and broad, the upper ones gradually smaller; petioles a finger's length. Flowers axillary, in racemes, very small. Capsule ovate-triangular with the corners winged, emarginate with the style permanent.

Native of Japan^s.

11. Stem filiform, twining, very long, with the rest of the plant smooth. Leaves alternate, petioled, turned all the same way; the lowest seven-lobed and very large; the higher ones five-lobed; the uppermost three-lobed and smaller; entire, acuminate, spreading. Petioles swelling at top and bottom, reflex, a finger's length. Racemes axillary two or three, loose, near a span in length. Flowers on patulous pedicels, a line in length, three or four together. Bractes ovate, acute. Calyx saffron-coloured. Germ inferior, smooth. Capsule oblong-three-sided, crowned with the permanent calyx, the corners sharp, produced and compressed; it is often barren. Seeds minute, a pair in each wing.

Native of Japan^t.

12. The whole plant smooth. Stem filiform, angular, twining, branched. Branches scattered, few, resembling the stem. Leaves opposite, petioled, oblong, entire, netted, an inch or an inch and half in length. Petiole somewhat angular, reflex-spreading, nearly the length of the leaf. Spikes axillary, one or two together, spreading, longer than the leaves, the rachis angular. It very much resembles *Rajania cordata*, were it not for the nine nerves on the leaves. The root of this is eaten boiled and cut into slices.—Native of Japan^u.]

^p Forster escul. p. 57.
^q Thunberg.

^r Hort. kew.
^s Ibid.

^t Linn. zeyl.
^u Ibid.

13. This differs from the seventh in the shape of the leaves; these having two round ears at their base, but the middle extends to an acute point, like that of an halbert. The bunches of flowers are longer, and looser than those of the seventh sort.

[14. Stem shrubby, unarmed, long, twining; the branches and petioles four-cornered. Leaves acuminate, smooth. Calyx three-leaved, with ovate, erect leaflets. Corolla three-petalled, ovate, fleshy, yellow, concave, nearly equal to the calyx. Filaments hardly any: anthers roundish, two-celled, very small. Germ inferior, oblong, three-sided, without any style, but three oblong, reflex stigmas. Capsule oblong-oval, the angles entering deep. Seeds ovate, few. Root vertical, consisting of one or two tubers, three feet long, round, regular, sharpish, curved a little, in shape and whiteness resembling elephant's teeth, whence the vernacular name *Khoai nga*, and the trivial *eburina*.

15. Stem shrubby, long, slender, climbing. Leaves quite entire, smooth, opposite, petioled. Flowers very small, axillary, on three-flowered peduncles. Calyx six-leaved, superior: leaflets ovate, thick, curved, almost closed, permanent, in a double row, of which the inner is smaller. Corolla and filaments none. Anthers three oblong, erect. Germ oblong, three-cornered, without any style, but three acute, reflex stigmas. Capsule three-cornered-ovate. Seeds orbiculate, covered with a thin membranous aril. The root is a middle-sized irregular tuber. The capsule is that of *Dioscorea*, but it differs in several other characters.

These are both natives of Cochin China *.]

PROPAGATION AND CULTURE.

These plants may be propagated by laying their branches into the ground, where in about three months they will put out roots, and may then be taken from the old plants, and put into separate pots, which should be plunged into the tan-bed in the stove. During winter they should have little water; but in summer, when they are growing vigorously, they should be watered three or four times a week; and in warm weather the glasses should be opened to admit a large share of free air. When seeds are received, they should be immediately sown in pots, and plunged into a hot-bed; where, if it be early in the spring, the plants will come up the same season: but when they are sown late, the seeds often remain in the ground till the following spring before they vegetate: in this case, the pots must be screened from frost during the winter, and put into a new hot-bed in the spring.

They may also be increased by cutting the roots in pieces, as practised for Potatoes; putting each piece in a pot filled with fresh earth, and plunged into the bark-pit; giving them little water until they shoot, lest they should rot. The roots do not grow to any great size here; and the plants having little beauty, seldom flowering, and requiring much care and room, they are seldom allowed a place in our stoves, except in very curious collections.

[Browne affirms that the roots of the Yams must be cut so as to have a little of the skin to each piece, for by that alone they germinate; the roots having no apparent buds or eyes, but casting out their weakly stems from every part of the surface alike. Two or three plants are put into a hole: the holes are dug pretty regular, a foot and a half or two feet square; these are afterwards filled from the adjoining banks, and the whole piece is covered with cane-trash, which serves to keep the ground cool and fresh, and to prevent the growth of weeds, from which these plants must be carefully preserved, until they grow sufficiently to cover the mould. They are planted commonly in august, and are ripe about november or december following.

When the roots are dug up, care should be taken to wound them as little as possible, for such as are cut throw out their sprouts very early, and are

* Loureiro.

seldom fit for any thing but planting. They should be rubbed over with ashes, and piled regularly on beds or hurdles, raised above the floor, that the air may come easily between them; or if they be piled in heaps, some ashes should be strewed between the layers.]

DIOSMA. (*Διος σμα*, *Jovis s. divinus odor*; so called from its divine smell.)

Lin. gen. n. 272. *Reich.* 292. *Schreb.* 374.

Juss. 298. *Gärtn. t.* 94. *Hartogia Edit.* 6.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Aggregatæ.—Rutaceæ Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-leaved: leaflets ovate, acute, permanent.

COR. *Petals* five, ovate, obtuse, sessile, erect-spreading. *Nectaries* five, placed on the germ.

STAM. *Filaments* five, subulate. *Anthers* subovate, erect.

PIST. *Germ* crowned with the nectary. *Style* simple, length of the stamens. *Stigma* obscure.

PER. *Capsules* five, ovate-acuminate, compressed, conjoined inwardly at the margin, distant at the tips, gaping at the upper future.

SEEDS solitary, oblong, ovate-depressed, acuminate at the point: an elastic aril, gaping on one side involving each seed.

OBS. *This is a multiform genus as to sex, figure of nectaries, number of capsules; hence it was divided into Hartogia and Diosma; but farther observations have brought them back into one genus.* *Syst. Veget. p.* 199.

There are species with monoecous flowers, others with hermaphrodite; others with ten stamens, of which five are sterile; and others differ otherwise from their congeners. R.

ESSENTIAL CHARACTER.

Cor. five-petalled. *Nect.* five on the germ. *Caps.* three or five conjoined. *Seeds* veiled.

SPECIES.

1. *Diosma oppositifolia.* *Opposite-leaved Diosma.*

Lin. spec. 286. *Reich.* 556. *hort. cliff.* 71. *Comm. rar. t.* 1. (*Spiræa*). *Seba thes.* 2. 41. *t.* 40. *f.* 5. (*Hypericum*).

Leaves subulate acute opposite.

2. *Diosma hirsuta.* *Hairy-leaved Diosma.*

Lin. spec. 286. *Reich.* 556. *hort. cliff.* 71. *Berg. cap.* 65. *Comm. rar. t.* 3. *Gärtn. fruct.* 2. 82.

Leaves linear hirsute.

3. *Diosma rubra.* *Red-flowered Diosma.*

Lin. spec. 287. *Reich.* 356. *hort. cliff.* 72. *Berg. cap.* 62. *Mill. fig. t.* 125. *f.* 1? marked 124. *Comm. rar. t.* 2. (*Spiræa*). *Pluk. mant. t.* 347. *f.* 4. (*Erica æthiopica*).

Leaves linear mucronate smooth keeled, dotted in two rows beneath.

4. *Diosma ericoides.* *Sweet-scented Diosma.*

Lin. spec. 287. *Reich.* 556. *Berg. cap.* 65. *Mill. fig. t.* 125. *f.* 2. marked 124. *Pluk. amaltb. t.* 279. *f.* 5. (*Ericæformis*).

Leaves linear-lanceolate convex beneath, imbricate in two rows.

[5. *Diosma capensis.*

Lin. syst. 239. *Reich.* 557.

Hartogia capensis. *Lin. spec.* 288.

Leaves linear three-sided, dotted beneath.

6. *Diosma capitata.*

Lin. syst. 239. *Reich.* 557. *mant.* 210.

Leaves linear imbricate scabrous ciliate, flowers in spiky heads.

7. *Diosma uncapularis.*

Lin. syst. 239. *suppl.* 155.

Leaves linear-lanceolate, capsules one-celled.

8. *Diosma latifolia.*

Lin. syst. 239. *suppl.* 154.

Leaves ovate-crenate, peduncles axillary solitary, stem villose.

9. *Diosma marginata.*

Lin. syst. 239. *suppl.* 155.

Leaves cordate-attenuated membranous-edged.

10. *Diosma barbiger*.
Lin. syst. 239. *suppl.* 155.
Leaves cordate stem-clasping, petals bearded.
11. *Diosma tetragona*.
Lin. syst. 239. *suppl.* 155.
Leaves cordate, retuse, folded together and keeled, ciliate, branches one-flowered.
12. *Diosma cupressina*.
Lin. syst. 239. *mant.* 50 and 343. *Reich.* 557.
Pluk. alm. t. 279. *f.* 2. (*Ericæformis*.)
D. dichotoma. *Berg. cap.* 63.
Brunia uniflora. *Lin. spec.* 289. *hort. cliff.* 71.
Leaves ovate three-cornered imbricate, flowers solitary terminating sessile.
13. *Diosma imbricata.* *Imbricated Diosma.*
Lin. syst. 239. *Reich.* 558. *mant.* 124. (*Hartogia*.)
Leaves ovate mucronate imbricate ciliate.
14. *Diosma lanceolata*.
Lin. spec. 287. *syst.* 239. *Reich.* 558.
Hartogia lanceolata. *Lin. syst.* 625. *edit.* 12.
Leaves elliptic obtuse smooth.
15. *Diosma ciliata.* *Ciliated Diosma.*
Lin. spec. 287. *syst.* 239. *Reich.* 558. *Berg.*
cap. 68. *Pluk. alm. t.* 411. *f.* 3. *Seba mus.*
2. t. 17. *f.* 5. (*Spiræa*.)
Hartogia ciliaris. *Lin. syst.* 625. *edit.* 12.
Leaves lanceolate ciliate wrinkled.
16. *Diosma crenata.* *Crenated Diosma.*
Lin. spec. 287. *syst.* 239. *Reich.* 558. *amæn* 4.
308.
Hartogia betulina. *Berg. cap.* 67.
Leaves lanceolate-oval opposite glandular-crenate, flowers solitary.
17. *Diosma uniflora.* *One-flowered Diosma.*
Lin. spec. 287. *syst.* 239. *Reich.* 558. *Pluk. mant.*
t. 342. *f.* 5. (*Cistus*.) *Curt. magaz. t.* 273.
Hartogia uniflora. *Berg. cap.* 71.
Leaves ovate-oblong, flowers solitary terminating.
18. *Diosma pulchella.* *Oval-leaved Diosma.*
Lin. spec. 288. *syst.* 239. *Reich.* 559.
Hartogia pulchella. *Lin. syst.* 625. *edit.* 12. *Berg.*
cap. 69.
Leaves ovate obtuse glandular-crenate, flowers twin axillary.
19. *Diosma asiatica.*
Lour. cochinch. 161.
Leaves lanceolate alternate, racemes subterminating.

DESCRIPTIONS, &c.

The species are all shrubs bearing the resemblance of heaths. The leaves are either opposite or scattered, frequently crowded and linear, sometimes having the edge underneath dotted. The flowers are in corymbs, or heads at the ends of the branches. The calyxes of some are glandulous, and dotted^a. They are natives of the Cape of Good Hope.]

1. This rises to the height of three feet; the branches are very long and slender, and are produced from the stem very irregularly. The leaves are placed cross-wise in pairs, and are pointed; every evening they close up to the branches. The flowers are produced along the branches from between the leaves; and in the evening, when they are expanded, and the leaves closely embrace the branches, the whole plant appears as if covered with spikes of white flowers; and as it continues a long time in flower, it makes a fine appearance when intermixed with other exotics in the open air.

[Introduced 1774, by Mr. Francis Masson^b, into the Kew garden, but it had been cultivated before by Miller.]

2. This sort makes a very handsome shrub, growing to the height of five or six feet. Stalks woody, sending out many slender branches. The leaves come out alternately on every side. Flowers in small clusters at the ends of the shoots; they are white, and are succeeded by starry seed-vessels, having five corners, like those of the starry anise; each of these corners is a cell, (cocculus) containing one smooth, shining, oblong, black seed: these seed-

vessels abound with a resin, which affords a grateful scent, as does also the whole plant.

[Cultivated by Mr. Miller in 1731^c.]

3. This is of humbler growth, seldom above three feet high, and spreads out into many branches. Leaves resembling those of heath. Flowers in clusters at the ends of the branches, like those of the second sort, but smaller, and the bunches not so large.

[According to Linneus, it has the habit and leaves of Juniper; these are smooth, and subtriquetrous.]

The species which is figured in Mr. Miller's plates approaches, as he says, near to this; but the leaves are longer, more pointed and smooth. He describes it as growing three or four feet high, and sending out many lateral branches, which extend pretty wide every way, so as to form a large bushy head. The leaves are pretty long and narrow, ending in a sharp point; they are of a light green colour and smooth, and when bruised emit a strong balsamic odour. The flowers grow in small clusters towards the extremity of the branches, and are white. Probably therefore not this species.

4. This is a low bushy shrub, which seldom rises above two feet high, but spreads out its branches far on every side. The leaves are narrow and smooth, of a light green colour, and being ranged on each side the branches, appear flat on the upper and under side; when they are bruised, they emit a very strong penetrating odour. The flowers are produced singly from between the leaves; they are white and tinged on their upper surface. The nectary is less visible, and the seed-vessels are much smaller^d. The Hottentots use this and other species to scent their ointments.

Cultivated in 1756, by Mr. Miller^e.

5. Leaves opposite. Flowers white, in a corymb. The barren stamens have almost the appearance of petals^f. Introduced in 1786, by Mr. Fr. Masson^g.

6. Stem proliferous, two feet high, erect, brown, having the appearance of a large Heath or *Brunia nodiflora*. Leaves crowded, scattered, in eight rows, on the outside convex, roughish, edged and ciliate a little. Flowers purple, sessile and forming a head. Calyx imbricate, leaflets (the innermost and true ones only five) ovate, pubescent at the edge. Petals roundish, with the claws the length of the calyx. Nectaries very small, awnless^h.

7. Branches wand-like, even. Leaves alternate, subpetioled, linear-lanceolate, even above, longitudinally wrinkled underneath, smooth, quite entire at the edge, but as it were serrate with pellucid dots. Peduncles lateral, few-flowered, much shorter than the leaves. Flowers minute. Capsules usually solitary, bent in, and having a beak of the same lengthⁱ.

8. The branches are somewhat pubescent. The leaves petioled, crenulate about the edge with pellucid dots, even, not dotted on the disk, bluntish, scarcely acute^k.

9. Erect, with the branches scarcely pubescent. Leaves remote. Flowers from the upper axils of the leaves, solitary or in pairs, the peduncles longer than the leaf. Stamens five, real. Nectaries five, from alternate filaments, having at the tip a black larger antherine gland bifid at the base, with a small yellow head^l.

10. Branching. Leaves sessile, opposite, mucronate, even, dotted underneath. Corymbs terminating, subsessile. Calyx five-cornered. Petals bearded with white, small^m.

11. This species is singular, and distinguished from the rest by the leaves being so close together, that the whole stem is covered with them, by the branches being quadrangular and thicker towards the top, and by the large, solitary, terminating flowerⁿ.

12. Branches filiform, erect, alternate, covered with alternate, minute leaves, like those of Heath,

^c Ibid. ^d Mill. fig. ^e Hort. kew. ^f Linn.
^g Hort. kew. ^h Linn. mant. ⁱ Linn. suppl.
^k Ibid. ^l Ibid. ^m Ibid. ⁿ Ibid.

^a Jussieu.

^b Hort. kew.

subscabrous, sessile, erect, terminating in a coloured callosity. Calyx membranaceous, lanceolate, erect. Petals often four, obovate, twice as long as the calyx, attenuated gradually into the claws. Stamens erect, the length of the calyx*.

13. This resembles *D. ciliata* (n. 15.) but the petals are purple and roundish, with the claws three times the length of the calyx. Leaves subimbricate, keeled*.

14. The leaves have a few hairs on both sides*.

15. Leaves acute, ciliate about the edge and along the keel. Petals oblong, with the claws scarcely longer than the calyx*.

16. Leaves of the calyx subulate and crenate*.

17. Leaflets of the calyx ovate, large and almost broader than the leaves*.

18. Though this was placed among the *Hartogias*, yet the flowers are hermaphrodite, but the fruit is three-celled. The horns of the germ are each of them terminated by two glands*.

The Hottentots use the leaves of this species dried and powdered, under the name of Bucku, to mix with the grease with which they anoint themselves. It gives them so rank an odour, that Thunberg says, he sometimes could not bear the smell of the men who drove his waggon*.

19. This is a small tree, six feet high, spreading and very much branched. Leaves quite entire, smooth. Flowers yellow, in compound racemes, anthers sessile, linear, at the side of the nectary, converging at top, capsules somewhat kidney-form, each on its proper peduncle. Seeds without any aril. Native of Cochinchina*.]

PROPAGATION AND CULTURE.

All these plants are propagated by cuttings, which may be planted during any of the summer months, in pots filled with light fresh earth, and plunged into a very moderate hot-bed, where they should be shaded in the day time from the sun, and frequently refreshed with water. In about two months the cuttings will have taken root, when they should be each transplanted into a small pot, and placed in a shady situation until the plants have taken fresh root, when they may be placed among other exotic plants, in a sheltered situation: these plants may remain abroad until the beginning of October or later, if the season continues favourable; for they only require to be sheltered from frost, so that in a dry airy green-house they may be preserved very well in winter, and in summer they may be exposed to the open air with other green-house plants.

The second sort frequently ripens its seed in England; but if the seeds are not sown soon after they are ripe, they rarely grow, or at least lie a whole year in the ground.

DIOSPYROS (of Pliny. *Granum Jovis*, Corn or wheat of Jupiter, or divine wheat.)

Lin. gen. n. 1161. Reich. 1274. Schreb. 1598.

Juss. 156. Gertn. t. 179. Guaiacana. Tourn.

371. Ebenus, Commers.

Cl. 23. 2. Polygamia Dioecia.—Oständria Monogynia Thunb. &c.

Nat. order of Bicornes.—Guaiacanae. Jussieu.

GENERIC CHARACTER.

* Hermaphrodite female.

CAL. Perianth one-leafed, four-cleft, large, obtuse, permanent.

COR. one-petalled, pitcher-shaped, larger, four-cleft; divisions sharp, spreading.

STAM. Filaments eight, bristle-form, short, almost inserted into the receptacle. Anthers oblong, unproductive.

PIST. Germ roundish. Style single, half four-cleft, permanent, longer than the stamens. Stigmas obtuse two-cleft.

PER. Berry globose, large, eight-celled, sitting on a very large spreading calyx.

SEED. Solitary, roundish, compressed, very hard.

* Male in a distinct plant.

* Linn. mant.

* Linn. syst. & mant.

* Linn. syst.

* Ibid.

* Ibid.

* Ibid.

* Travels, vol. 2. p. 187. engl. edit.

* Loureiro.

CAL. Perianth one-leafed, four-cleft, sharp, upright, small.

COR. one-petalled, pitcher-shaped, leathery, four-cornered, four-cleft: divisions roundish, rolled back.

STAM. Filaments eight, very short, inserted into the receptacle. Anthers double, long, sharp: the interior shorter.

PIST. rudiment of a Germ.

OBS. In Diosp. Virginiana the stamens of the male are 16, of which 8 are inferior: In most of the species the flowers are hermaphrodite.

ESSENTIAL CHARACTER.

HERMAPHR. Cal. four-cleft: Cor. pitcher-shaped, four-cleft. Stam. 8. Style four-cleft. Berry eight-seeded.

MALE. Cal. Cor. and Stam. of the other.

SPECIES.

1. *Diospyros Lotus.* European Date-plum.

Lin. spec. 1510. Reich. 4. 357. hort. cliff. 149.

Pallas. rofs. I. 2. 20. t. 58. Lour. cochinch.

226.

Lotus africana latifolia. Baub. pin. 447.

Pseudo-Lotus. Cam. epit. 156.

Guaiacum patavinum. Ger. 1310. Park. parad. 570.

—latifolium. Ger. emac. 1495. f. 1. Raii hist.

1574.

Guajacana. Baub. hist. Park. theat. 1522. f. 21.

β. *L. afric. angustifolia.* Baub. pin. 447.

L. afr. altera. Cam. epit. 157.

Zizyphus Cappodocia. Ger. 1306.

G. pat. angustifolium. Ger. emac. 1495. f. 2. Park.

theat. 1523. f. 3.

The two surfaces of the leaves of different colours.

2. *Diospyros virginiana.* American Date-plum.

Lin. spec. 1510. syst. 918. Reich. 4. 357. hort.

cliff. 149. Gron. virg. 156. Kalm. itin. 2.

200, 255, 437. edit. eng. 1. 127, 345. Mill. fig.

t. 126.

Lotus virginiana. Park. parad. 570. t. 569. f. 6.

Loti africanæ similis indica. Baub. pin. 448.

Guajacana. Catesb. cars. 2. t. 76.—virgin. Pishamin

dicta. Park. theat. 1523. 4. Raii hist. 1918.

Pluk. alm. t. 244. f. 5.

The two surfaces of the leaves of the same colour.

[3. *Diospyros Kaki.*

Lin. syst. 918. suppl. 439. Thunb. jap. 157. Lour.

cochinch. 226.

Kis. Kaki. Kämpf. amœn. v. 805. t. 806.

Peduncles three-parted.

4. *Diospyros hirsuta.*

Lin. syst. 918. suppl. 440.

Branches and leaves villose underneath, leaves elliptic

obuse, flowers axillary beaped sessile.

5. *Diospyros Ebenaster.*

Retz. obs. 5. n. 88. Gærtn. fruct. 2. 478.

D. Ebum. Lin. syst. 918. suppl. 440.

D. decandra. Lour. cochinch. 227.

Ebenaster. Rumph. amb. 3. 13. t. 6.

Leaves oval-oblong leathery, buds smooth.

6. *Diospyros Ebum.*

Retz. obs. 5. n. 89.

D. glaberrima. Rotb. in nov. act. Hafn. 2. 540.

t. 5.

Leaves ovate-lanceolate acuminate, buds rough with

hairs.

7. *Diospyros lobata.*

Lour. cochinch. 227.

Leaves ovate-lanceolate, smooth on both sides; pedun-

cles one-flowered; axillary; berries eight-lobed.

8. *Diospyros dodecandra.*

Lour. cochinch. 228.

Flowers twelve-stamened axillary, berries lenticular.

9. *Diospyros tetrasperma.*

Swartz prodr. 62.

Leaves membranaceous shining wedge-form, berries

four-seeded.

DESCRIPTIONS, &c.

1. The smaller branches spread a little, and are

yellowish. Leaves oval-lanceolate, large, quite en-

tire, paler underneath, somewhat hoary, with the

veins somewhat hairy. Flowers small, reddish-

white, rotate. Fruit the size of a cherry, yellow

when

when ripe, sweet with astringency, sessile in the bosom of the leaves, within the calyx which is increased, somewhat cartilaginous, flattened, usually five-cleft, seldom four-cleft. These berries are recommended as a cure for the diarrhoea^a.

Loureiro describes it, as a small tree, six feet high, with spreading branches. Leaves ovate-lanceolate, quite entire, large, alternate, smooth, with oblique prominent ribs. Flowers pale, terminating, solitary, with a very large leafy calyx, four or five-parted, flat, permanent. Berry round, half an inch in diameter, yellow, lanuginose, one-celled, containing eight oblong-compressed bony seeds, with very little pulp.

The broad-leaved variety grows up into very large trees in the southern parts of Caucasus. It is also abundantly native of the woods of Hyrcania and the whole coast of the Caspian^b.

Gesner was informed that it grows on the mountains about Verona; and Mr. Ray is pretty confident that he saw it in his way from Lerici to Lucca, not far from the latter. In the woods on the hills about Turin, plentifully about Lyons, and on the eastern coast of Africa, whence it is supposed to have first come to Europe.

Mr. Miller has given the figure of the American sort, which he has confounded with this;] He says it is a tree of middling growth in the south of Europe, upwards of thirty feet high; particularly that there is a very old tree in the botanic garden at Padua, which produces plenty of fruit every year, and that many trees have been raised from the seeds of it; but that there are none of these trees in England, except what had been raised by him, from seeds which were sent to him by the Chevalier Rathgeb, his imperial majesty's minister at Venice. [He does not seem to have known that Gerarde had planted two trees of this sort in the Earl of Essex's garden at Barne Elmes, that it was also growing in Gerarde's own garden, and in that of Maister Graie an apothecary of London. Gerarde says, that in English it is called *Bastard. Meunwood*: this name is now quite lost. Parkinson calls it Indian Date-Plum.

2. The wood of the American Date-Plum is very hard, but brittle and somewhat white; the branches are many, and grow slender to the end, covered with a very thin greenish bark. Leaves many, broad, green, without dent or notch on the edges, so like the former, that it seems to be the same^c. Our European Lotus however, has a lighter coloured bark, on the branches inclining to yellow, on the twigs yellow and shining: the American has a dark brown bark on the branches, and on the twigs it is grayish from pubescence, so that they are soft to the touch, whereas the others are smooth. The leaves of the first are in general much narrower, less pointed, more shining on their upper surface, not pubescent on the under, but rather glaucous: those of the second are gray on the back, and pubescent, particularly the midrib and petiole. Fruit in form and bigness like a date, very firm like that fruit, and almost as sweet, with a great flat thick kernel within, very like those of the former, but larger^d.]

It rises (in England) to the height of fourteen or sixteen feet, but generally divides into many irregular trunks near the ground, so that it is very rare to see a handsome tree of this sort. It produces plenty of fruit in England, but it never comes to perfection. [If it be eaten while it is green (as Captain Smith relates, in the discovery of Virginia) it draws the mouth awry by its harsh and binding taste; but when ripe it is pleasant^e. This is not the case till it has been mellowed by the frost; it is then very sweet and glutinous, with a little astringency; and a considerable quantity may be eaten without inconvenience. In North America they make a palatable liquor with this fruit and malt; they also draw a spirit from it. The time of ripening is from the end of september to december. The wood of this tree is very good for joiner's tools, such as planes,

^a Pallas. ^b Ibid. ^c Parkinson. ^d Ibid. ^e Ibid.

handles to chisels, &c. but it soon rots if exposed to the weather. It spreads very much, and is not easy to extirpate; but in the northern provinces of the American states, it is often killed by frost in hard winters^f.

In Virginia and Carolina there is great plenty of these trees in the woods: also in Pennsylvania, Philadelphia, New Jersey, &c. for the most part in wet places, round the water-pits. It is known there by the name of *Pisbamin* or *Perfimon*.

3. A middling sized tree very branching. Branches and twigs alternate, round, dotted, smooth, tomentose at the ends spreading. Leaves alternate, petioled, ovate, acuminate, quite entire, paler underneath, scarce apparently villose, netted-nerved, smooth above, an inch or more in breadth, from an inch to three inches in length, spreading. Petioles semicylindric, subtomentose, half an inch long. Flowers axillary, peduncles tomentose, half an inch in length. Pedicels one-flowered like the peduncles. Perianth villose, divisions ovate, acute, shorter than the corolla, which is subcampanulate; tube equal, divisions ovate, obtuse, reflex. Filaments very short, inserted into the base of the corolla. Anthers twin, as it were doubled, lanceolate, pale, erect, shorter than the corolla, approximating in a double row, villose, the inner ones a little shorter. Germ superior, conic. Style subulate, erect, shorter than the calyx. Stigma bristle-form and bifid. Fruit a subglobose pome, obscurely four-cornered, smooth, when unripe green, when ripe yellow, truncate at the base, where the calyx remains, obtuse with the stigma also permanent, eight-valved, eight-celled, the size of a middling apple, having nearly the taste of a sweet white plum, fleshy. Seeds half-mooned, compressed at one edge, smooth. Some of the cells are sometimes barren.

The fruit eaten plentifully occasions a diarrhoea in the autumnal months. It is preserved in the same manner as the fig, by sprinkling meal or sugar over it.

This genus ought certainly to be reduced to the class Octandria, for there is a style in all the flowers, though it is not always fertile; and all the flowers are hermaphrodite. Loureiro says, that trees of this species are sometimes found, though seldom, with male flowers only.

β. There is a variety of this, in which the leaves are oblong-ovate, acute, nerved, a finger's length; the petioles channelled. Flowers alternate on the twigs, approximating, on such short peduncles as to be almost sessile. Perianth green, spreading, permanent; divisions bluntish, smooth. Germ marked with four or five streaks: style very short, four-cornered, whitish. Pome ovate, very obtuse, yellow, with a soft astringent pulp like that of the orange; usually eight-celled, sometimes ten-celled, but very seldom nine-celled, the size of a pigeon's egg, always barren.

Native of Japan, and cultivated there^g. Also in China, Cochinchina, and some parts of the East Indies^h. It differs from the American sort in its branches, and the pubescence on the lower surface of the leavesⁱ.

4. It differs from the foregoing in having the flowers sessile and many together, and the leaves obtuse at both ends, not acuminate. Found in Ceylon, by Thunberg^k.

5. This is a very large tree, very smooth in all its parts, the timber very hard. The small branches have an ash-coloured bark; those which bear the leaves are blackish. Leaves alternate, on very short petioles, quite entire, obtuse, shining, often spotted, beneath wrinkled with small veins, and as it were a little hoary. Berry sessile, ovate, on the four-cleft, reflex calyx, seeds six to eight, ovate, black, somewhat compressed. It is very like the first species, but the leaves are more ovate, and more hoary underneath.—The wood is heavy, compact, and hard, whitish next the bark, but towards the middle very

^f Kalm. ^g Thunberg. ^h Loureiro. ⁱ Linn. suppl. ^k Ibid.

black; this blackness gradually tinges the whole body, in the same manner as the resinous part of the fir pervades the body by the decaying branches. This is the true Ebony, detected by Koenig, and confirmed by Thunberg.—Native of the vast woods of Ceylon¹, Amboina, CochinChina, and the East Indies.

According to Retzius, this species is confounded with the next in the Supplement.

Loureiro describes his *D. decandra* as a large tree, with the boughs somewhat spreading. Leaves ovate-lanceolate, quite entire, lanuginose, scattered, on short petioles. Flowers white, axillary, in threes, on short peduncles. Calyx four-parted, spreading, small, permanent; with acute, thick, hairy segments. Corolla bell-shaped, with a pitcher-shaped tube drawn tight at the neck; border small, four-cleft, obtuse, reflex. Filaments constantly ten, fixed to the bottom of the corolla; with oblong standing anthers. Germ roundish, superior, with scarce any style, and three trifid, spreading stigmas. Berry large, subglobular, umbilicate, yellowish, pulpy, one-celled, with from six to eight seeds, which are bony, and of a compressed ovate form. According to Jussieu, the fruit has from eight to twelve cells. Gærtner describes the seeds as semi-ovate, wedge-form-compressed, slightly convex on one side, flat on the other, surrounded by a depressed line, of a rufous ferruginous colour.

The fruit has an austerity mixed with its sweetness, and a strong unpleasant smell; it is however eaten, and sold in the markets in the northern provinces of CochinChina. The wood of this tree, when of a sufficient age, is excellent for cabinets and all elegant works, being of a compact, fine, regular grain, heavy, very white veined with black, and sometimes black at the heart^m. It is not however the true Ebony; which is described by Loureiro (p. 613.) under the name of *Ebenoxylum*.

6. Leaves about three inches in length, thin, flexible, dark green.—Native of Ceylon. The foregoing was observed in the woods near Calcutta, by Koenigⁿ.

7. This is a small tree, eight feet high, with spreading branches. Leaves small, quite entire, pale green, petioled, alternate. Filaments always eight, with double anthers on each. Flowers white, hermaphrodite; tube four-cornered, ventricose; border small, four-cleft. Style scarcely any; stigma oblong, deeply four-cleft. Berry pale yellow, an inch in diameter, compressed, eight-celled, one-seeded; with a sweetish-austere pulp, without any smell.

8. This is a large tree. Leaves broad lanceolate, quite entire, alternate. Flowers white; tube subglobular, large; with a short, four-cleft border. Stamens eighteen, placed on the bottom of the tube. Berry pale, compressed, shaped like a lens, one-celled, with eight compressed-ovate, bony, large seeds; the pulp is sweetish, astringent, eatable but not pleasant. The wood is like that of the false Ebony (n. 5.), but has not the black veins. This tree is much used for supporting the Black Pepper shrubs. These are both natives of CochinChina^o.

9. Native of Jamaica^p.]

PROPAGATION AND CULTURE.

1. 2. These are both propagated by seeds, which will come up very well in the open ground; but if they are sown upon a moderate hot-bed, the plants will come up much sooner, and make a greater progress; but in this case the seeds should be sown in pots or boxes of earth, and plunged into the hot-bed, because the plants will not bear transplanting till autumn, when the leaves fall off; so that when the plants are up, and have made some progress, they may be inured by degrees to the open air; and in June they may be wholly exposed, and may remain abroad until November, when it will be proper to set the pots under a hot-bed frame to protect them

¹ Linn. Suppl.

^m Loureiro.

ⁿ Retz.

^o Loureiro.

^p Swartz.

from hard frost, which, while they are very young, may kill the tops of the plants; but they must have as much free air as possible in mild weather. The following spring, before the plants begin to shoot, they should be transplanted into a nursery, in a warm situation, where they may be trained up for two years, and then removed to the places where they are designed to remain. These are both hardy enough to resist the greatest cold of this country, after the plants have acquired strength.

[The other species are natives of the East Indies and other hot climates; they require therefore the protection of the bark-stove. They have not however yet been introduced into cultivation here.]

DIOTHECA. See *Morina*.

DIPHUSA (Απο του δις και των φουσων. Jacq. So called on account of the two bladders (φουσα) of the legume.)

Lin. gen. Schreb. n. 1104. Jacq. amer. 208.

Juss. 362.

Class. 17. 4. Diadelphia Decandria.

Nat. Order of *Papilionaceæ* or *Leguminosæ*.

GENERIC CHARACTER.

CAL. Perianth one-leafed, bell-shaped, slightly compressed, half-five-cleft: the two upper segments roundish, obtuse, plane, spreading very much; the two lateral ones ovate, acute, erect, flattish; the lowest lanceolate, acuminate, concave, erect, a little longer than the rest.

COR. papilionaceous. Standard obovate-oblong, emarginate, plane, broad, reflex, on a claw the length of the calyx. Wings shorter than the standard, oblong, obtuse, ascending, converging behind, diverging in front. Keel sickle-shaped, acuminate, compressed; ascending, shorter than the wings.

STAM. Filaments ten, diadelphous (simple and nine-cleft,) ascending. Anthers ovate, small.

PIST. Germ subcylindrical, pedicelled: Style capillary, rising. Stigma simple, acute.

PER. Legume linear, compressed-flat, obtuse, augmented longitudinally on each side by a membranaceous, very large, inflated bladder, closed all round; one-celled.

SEEDS several, oblong, obtuse, compressed, furnished with a little hook.

OBS. The future is common both to valve and bladder. The legume divides into joints between the seed.

ESSENTIAL CHARACTER.

Cal. half-five-cleft. Legume with a bladder on each side. Seeds hooked.

SPECIES.

1. *Diphyssa carthaginensis*.

Jacq. amer. t. 208. pict. t. 261. f. 59.

DESCRIPTIONS, &c.

This is a small unarmed inelegant erect branching tree, ten feet in height, and approaching to the arborescent *Mimosas*. Leaves pinnate, smooth, two inches long, on the younger branches: there are usually five leaflets on each side, with an odd one, though not unfrequently more or less; they are oblong, emarginate, small, some alternate, others opposite. Common peduncles two-flowered or three-flowered, axillary, filiform, the length of the leaves. Flowers yellow, with scarcely any smell. Legumes have thin, dry, whitish bladders to them, whence the name. They continue long upon the tree without opening, till at length they fall in transverse pieces at the joints. Seeds five or six, yellowish.

It grows every where about Carthage in New Spain; and flowers in August and September^a.]

DIPSACUS. (Of Pliny. Διψακος of Dioscorides. From Διψαω, sitio; διψακος, is also the greek name for the disease which we call diabetes, and which is accompanied with great thirst.)

Lin. gen. n. 114. Reich. 120. Schreb. 148. Gærtn.

t. 86. Tourn. 265. Vaill. A. G. 1722. Juss.

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Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Aggregatæ*.—*Dipsacæ* Juss.

^a Jacquin.

GENERIC CHARACTER.

- CAL. *Perianth* common many-flowered, many-leaved: leaflets longer than the floscule, loose, permanent. *Perianth* proper scarce manifest, superior.
- COR. *proper universal* equal, one-petalled, tubular: border four-cleft, upright: outer division larger, more acute.
- STAM. *Filaments* four, hair-form, longer than the corolla. *Anthers* incumbent.
- PIST. *Germ* inferior. *Style* filiform, length of the corolla. *Stigma* simple.
- PER. none.
- SEEDS solitary, columnar, crowned by the entire calycine margin.
- REC. common conical, separated by longer chaffs.

ESSENTIAL CHARACTER.

- Cal. common many leaved; proper superior.
Recept. chaffy.

SPECIES.

1. *Dipsacus fullonum*. *Cultivated Teasel*.
Lin. syst. 143. Mill. dict. n. 2. Jacqu. austr. Wilb. 137. Pluck, ic. t. 50.
D. fullonum β. Lin. spec. 140. Reich. 274. Huds. angl. 61.
D. fativus. Baub. pin. 385. Ger. emac. 1167. 1. Park. theat. 984. 1. Raii hist. 382. syn. 192. Dod. pempt. 735. Baub. hist. 3. 73. Mor. hist. f. 7. t. 36. f. 1.
Carduus fullonum. Lob. ic. 17.
Leaves sessile serrate, involucre short, horizontal, chaffs bent back.
2. *Dipsacus sylvestris*. *Wild Teasel*.
Lin. syst. 143. Mill. dict. n. t. Jacqu. austr. 5. t. 402. With. 137. Relb. cant. n. 110. Curt. lond. 3. t. 9. Hall. helv. n. 198. Blackw. t. 50. Neck. gallob. 82. Villars dauph. 2. 299. Dod. pempt. 735. Ger. 1005. 1. emac. 1167. 2. Park. theat. 984. 2. Baub. pin. 385. 3. Baub. hist. 3. 74. Mor. hist. 7. 36. 3. Raii hist. 382. syn. 192.
D. fullonum Pollich. pal. n. 137.—α. Lin. spec. 140. Reich. 274. Huds. angl. 61.
D. purpureus. Fuchs. 225.
Labium Veneris alterum. Camer. epit. 432.
Leaves connate crenate, uppermost entire, involucre long; bending up, chaffs straight.
3. *Dipsacus laciniatus*. *Cut-leaved Teasel*.
Lin. spec. 141. syst. 143. Reich. 275. Scop. carn. n. 142. Pollich. pal. n. 138. Krock. files. n. 201. Jacqu. austr. 5. t. 403. Mill. illustr. Gertn. fruct. 2. 40. Villars dauph. 2. 299.
D. fol. laciniato. Baub. pin. 385. Mor. 7. 36. 4.
D. sylvestris Ger. 1005. 2.—fol. lacin. Baub. hist. 3. 75. f. 1. Raii hist. 382. Mor. 7. 36. 4.
Leaves connate sinuate.
4. *Dipsacus pilosus*. *Small Teasel*.
Lin. spec. 141. syst. 143. Reich. 275. hort. upf. 25. cliff. 30. Huds. angl. 61. With. 138. Curt. lond. 1. 10. abr. t. 14. Relb. cant. n. 111. Lightf. scot. 113. Hall. helv. n. 199. Pollich. pal. n. 139. Leers herborn. n. 103. Jacqu. austr. 3. t. 248. Krock. files. n. 202. Blackw. t. 124. 1, 2. Villars dauph. 2. 300.
D. minor. Neck. gallob. 81.—f. *Virga pastoris*. Ger. emac. 1168. 3. Raii hist. 382. syn. 192.
D. sylvestris capitulo minore, vel *Virga pastoris* minor. Baub. pin. 385. Mor. 7. 36. 5.
D. tertius. Dod. pempt. 735. 3.
Virga pastoris. Camer. epit. 433. Park. theat. 984. 4.—vulgaris. Baub. hist. 3. 75. 2.
Leaves petioled, with little appendages.

DESCRIPTIONS, &c.

Biennial, tall, herbaceous plants, prickly or rough, terminated by rough heads of flowers. The leaves sometimes connate at the base, and forming a basin containing rain.]

1. This is cultivated in great quantities in the west of England, for raising the nap upon woollen cloths, [by means of the crooked awns or chaffs upon the heads; which in the wild sort are straight, or at least not hooked. For this purpose they are fixed round the circumference of a large broad wheel,

which is made to turn round, and the cloth is held against them. These heads are collected in august^a. Parkinson calls it Fullers Thistle; and Gerarde, Tame or Garden Teasel. In German it is named *Kardendistel*, *Weberdistel*, *Weberkarten*, *Karten*, *Kartetschendistel*, *Walkerdistel*, *Tuchmacherdistel*, &c. In Dutch, *Vollers Kaarden*, *Kaarden* or *Kaardenkruid*. In Danish, *Kardetidsel*, *Kradsetidsel*. In Swedish, *Kardor*, *Kardtisel*. In French, *Chardon à foulon*, *à carder*, *à bonnetier*; *Cardere à foulon*, *Cardiere*, *Curve de Venus*, *bain de notre Dame*. In Italian, *Dissaco*, *Cardo da cardare*, *Labbro di Venere*. In Spanish, *Cardencha*, *Cardo peinador*. In Portuguese, *Cardo penteador*. In Russian, *Sukonnaja*, *Tschotka*.

2. Root biennial, simple, with large fibres. Stem from three to six feet high, branched, round, striated, hollow, spinous, but the spines few near the base; very numerous near the heads, long and sharp. Root-leaves of the first year's plant spread on the ground in a circular form, ovate-oblong, bluntish, notched, wrinkled, and rough with spines thinly scattered over the leaf: stem leaves, at least the lowermost, less wrinkled, united at the base so as to form a large cavity containing water after rain, (hence the names of *Dipsacus* and *Labrum Veneris*); they are ovate-acute, notched, thinly beset with spines on the edge and midrib: uppermost slightly united at the base, narrower, entire, and almost free from spines. Heads numerous, solitary, upright, ovate-oblong, somewhat pointed at top. Flowers blue-purple, first breaking forth about the middle of the head. Common perianth or involucre, composed of linear rigid leaves, beset with small spines, bending upwards, the length of the head, or longer, unequal. Calyx very minute, green, and edged with hairs. Corolla, tube whitish, and appearing slightly villose if magnified. Filaments straight, inserted into the tube of the corolla: anthers oblong, violet-coloured. Germ four-cornered, whitish, grooved: style a little longer than the corolla: stigma channelled and bent a little in. Chaffs of the receptacle the length of the stamens, rigid, bearded, the uppermost longest, at bottom hollow and somewhat triangular; the beard or awn running out to a long, straight and somewhat hispid point^b. Some of the lower chaffs are greatly bowed downwards, but not hooked at the point^c. Native of most parts of Europe, on the edges of pastures, in uncultivated places and by road sides; flowering from June or July to September.

The water contained in the basin formed by the leaves is said to cure warts on the hands, and to serve as a beauty wash for the face; hence Ray conjectures that this plant might have received its name of *Labrum Veneris*. It is also supposed to be good for the eyes.

Cattle in general, even the ass, appear to avoid it. A small moth, earwigs and other insects, take refuge in the head^d.

Mr. Woodward says that he has not found it north of Nottinghamshire and Derbyshire. A friend however assures me that he remembers to have seen it about Newcastle, and Mr. Lightfoot mentions its being wild in Scotland.

According to Linneus, the cultivated Teasel is only a variety of the wild one. They certainly differ so little, that it was not necessary to describe both. Haller, Jacquin and most modern authors are disposed to consider them as distinct. Mr. Miller, having cultivated both forty years, hesitates not to be of this opinion.

3. Root biennial, long, branching. Stem three feet high, upright, angular, prickly, branched. Leaves pinnatifid, lacinate or sinuate, bright green, smooth above, pubescent beneath, having short prickles along the nerve, and being ciliate on the edge. Heads ovate, obtuse, terminating the stem and branches; with an involucre at the base consisting of stiff prickly leaves spreading out like a star. Chaffs lanceolate, straight, ending in a stiff prickle.

^a Withering.^b Curtis.^c Stokes in Withering.^d Curtis.

Flowers whitish. Anthers reddish^c. It differs from the common Teasel, not only in the leaves being cut so deeply, but in the prickles being weaker, and having lateral flowers, rising higher than those in the middle^f. The Goldfinch is fond of the seeds; as it is also of our common sort.—Native of Germany, France, Alsace, Austria, Carniola.—Cultivated 1683, by Mr. James Sutherland^g.

4. It differs from its congeners in having a fragile stem, from two feet high to six. Sharp with short prickles pointing upwards, angular and grooved. Leaves with little appendages at the base; but these are sometimes wanting; and the upper leaves are nearly entire, slightly hairy on both sides, and with short prickles along the midrib underneath.—Scales of the receptacle longer than the corollas, ciliate, in hemispherical heads. Leaves of the common calyx or involucre linear-lanceolate, ending in a sharp point, shorter than the head; these and the scales edged with long soft hairs. Corollas white, sometimes with a purple tinge; anthers dark purple: seeds ovate-quadrangular, crowned with the calyx. Stigma sometimes simple, but most frequently bifid, with the lower lobe shorter than the upper; as it is likewise in the common sort: sometimes it is slightly cloven into three parts. The heads of flowers hang down during the time of flowering, but afterwards become upright^h.

This plant is called *Shepherd's-rod* and *Shepherd's-staff*. It flowers in July, and the seeds are ripe in September. They are eaten by small birds; and the flowers are frequented by moths in great numbers, after sun-set. It is the handsomest species of the genus, and very distinct from the three others, which are nearly allied. It is native of France, Germany, Switzerland, and Austria. With us, but not common in moist and watery places, by brooks and damp hedges and ditches: near London Mr. Curtis has found it only between Deptford and Lewisham; Johnson found it in great plenty at Edgecombe (Adfcombe) by Croydon in Surry; it occurs near Guildford, Godalmin, &c. in the same county.—It also grows in Beckenham church-yard, &c. in Kent, and in several other places in that county, as about Chislehurst, Foot's-Cray, Farnborough, &c. about Finchley in Middlesex; Fulham between the Bishop's palace and the field; More-hall, &c. near Harefield; it occurs in several places near Cambridge; near Thame park in Oxfordshire; also at Lilleshall Abbey in Shropshire; Evesham in Worcestershire. Gerard remarked it in the way from Braintree to Hedingham, and from Dunmow to London.—Garanton Park and Hollinghall wood in Leicestershire. Pleasly forges, in Nottinghamshire, and in Scotland.]

PROPAGATION AND CULTURE.

1. This plant is propagated by sowing the seeds in March, upon a soil that has been well ploughed: about one peck of this seed will sow an acre; for the plants should have room to grow, otherwise the heads will not be so large, nor in so great quantity. When the plants are come up, hoe them in the same manner as is practised for Turneps, cutting down all the weeds, and singling out the plants to about six or eight inches distance; and as the plants advance, and the weeds begin to grow again, hoe them a second time, cutting out the plants to a wider distance, for they should be, at last, left at least a foot asunder: and you should be particularly careful to clear them from weeds, especially the first summer; for when the plants have spread so as to cover the surface of the ground, the weeds will not so readily grow between them. The second year after sowing, the plants will shoot up stalks with heads, which will be fit to cut about the beginning of August; at which time they should be cut, and tied up in bunches, setting them in the sun if the weather be fair; but if not, they must be set in rooms to dry. The common produce is about an hundred and sixty bundles or staves upon an acre,

^c Scopoli, Pollich, Krock. ^f Villars. ^g Hort. kew.
^h Curtis, Woodw. mss. With. Pollich, Leers, Krock.

which they sell for about one shilling a staff. Some people sow Caraway and other seeds among their Teasels, but this is not a good method, for the one spoils the other; nor can you so easily clear them from weeds as when aloneⁱ.

[This however is still the common practice in Essex, where the Teasel is chiefly cultivated, on account of the neighbouring manufactures of ordinary cloth and baize, in which it is used for raising the nap.

Old pasture land, the soil of which is a strong clayey loam, is best adopted to the culture of Teasel. The method of managing the land for their compound crop, has been already given under the article Carum or Caraway. We have only to add therefore, for the instruction of the hoers, that the first appearance of Teasel is much like that of a lettuce; that the heads being ready about the middle of September the second year, are to be cut as soon as they begin to turn brown, with a stalk a foot long, and tied up in bundles or bunches, twenty-five in each; twenty-four of these bunches are fixed on a small stick, and called a row, two hundred and forty of which make a load in bulk, equal to a ton of hay from the meadow.

The work of cutting and bunching the Teasel can only be done by those, who are well acquainted with it. The crop must be looked over, and the heads cut at several times as they ripen. The produce is sometimes a load on an acre, the average price of which is twelve pounds. But often there is not more than one fourth of a load^k.

DIPSACUS. See *Scabiosa*.

DIPTERYX. (*Διπτερυξ*, the same with *Διπτερος*, two-winged. The calyx of the flower having two wings.)
Lin. gen. Schreb. n. 1161. Coumarouna Aubl. t. 296. Juss. 364. Taralea Aubl. t. 298. Juss. 350.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceæ* or *Leguminosæ*.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, turbinate: two upper segments wing-shaped, oblong, concave, spreading; the third lower, small, entire or three-toothed.

COR. papilionaceous. *Standard* longer, obovate, bent in at the sides, erect. *Wings* two, oblong, shorter than the standard. *Kael* shorter, two-petalled.

STAM. *Filaments* eight to ten united into a cylinder, cloven at top. *Anthers* small, roundish.

PIST. *Germ* pedicelled, oblong. *Style* awl-shaped, ascending. *Stigma* acute.

PER. *Legume* large, ovate, compressed, thick, one-celled.

SEED single, ovate.

OBS. *Coumarouna Aubl. has eight stamens, and the lower lip of the calyx entire. Taralea Aubl. has ten stamens, and the lower lip of the calyx three-toothed.*

ESSENTIAL CHARACTER.

Cal. two upper segments winged. *Legume* ovate, compressed, one-seeded.

SPECIES.

1. *Dipteryx odorata. Coumarouna. Aubl. pl. gui. p. 741. t. 296. Leaves alternate.*
2. *Dipteryx oppositifolia. Taralea. Aubl. pl. gui. p. 745. t. 298. Leaves opposite.*

DESCRIPTIONS, &c.

1. This is a large tree, sixty feet high, very much branched at top. The leaves are large, alternate, and pinnate: the leaflets perfectly entire, two or three on each side, affixed alternately on the midrib. The flowers are borne in racemes, which are axillary and terminal. Their colour is purple, dashed with violet. The almonds or fruits are fragrant, and are put by the Creoles into chests, in order to drive away insects, as well as for the sake of their smell. It grows in the large forests of Guiana.

2. This, like the former, is a tall tree; and very branchy at top. The leaves are opposite, and pinnate: the leaflets large, ovate, sharp, strong, and perfectly entire. The flowers are panicked, ax-

ⁱ The above is chiefly from Mortimer.

^k Sewel in Young's

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illary, and terminal. When blown, their fragrance is very diffusive. It grows in the woods of Cayenne.]

DIRCA (*Dirca* is the name of a plant in Dioscorides, otherwise *Kipaxia*; but of the derivation of *Dirca* I know nothing.)

Lin. gen. n. 486. Reich. 527. Schreb. 665. Juss. 77.

Cl. 8. 1. Octandria Monogynia.

Nat. Order of *Vepreculæ*.—*Thymelææ*. Juss.

GENERIC CHARACTER.

CAL. none.

COR. one-petalled, club-shaped; Tube bellying above. Border obscure, with unequal margin.

STAM. Filaments eight, capillary, inserted into the middle of the tube, longer than the corolla. Anthers roundish, upright.

PIST. Germ ovate, with oblique tip. Style filiform, longer than the stamens, crooked at the tip. Stigma simple.

PER. Berry one-celled.

SEED single.

ESSENTIAL CHARACTER.

Cal. none. **Cor.** tubulous with an obscure border.

Stam. longer than the tube. **Berry** one-seeded.

SPECIES.

1. *Dirca palustris*. Marsh Leather-wood.

Lin. spec. 512. Reich. 2. 194. amæn. 3. 12. t. 1. f. 7. Kalm. itin. 3. 88. edit. engl. 2. 148. Dubam. arb. 1. t. 212. Gron. virg. 155. (Thymelæa.)

DESCRIPTION, &c.

Height five or six feet, but in Europe rarely more than half so high. It sends out many jointed branches near the root. Leaves oval, pale yellowish, and smooth. The flowers come out from the side of the branches, two or three upon each peduncle; they are of a greenish white colour, and appear early in the spring, when the leaves begin to shoot.

[It is a little shrub growing on hills towards swamps and marshes in North America. The bark is very tough, as is also the shrub itself, insomuch that the branches cannot easily be separated without cutting. The twigs are used for rods, and the bark for ropes, baskets, &c. for which it is very fit, being equal in strength and toughness to the bark of the lime tree. The French in Canada call it *Bois de Plomb* or *Leaden-wood*.]

Introduced in 1750, by Archibald Duke of Argyll. It flowers in march and april^b.]

PROPAGATION AND CULTURE.

This shrub is very difficult to propagate in Europe, for as it does not produce seeds here, it can only be increased by layers or cuttings, and these are generally two years before they put out roots: and as it grows naturally in very moist places, it is with difficulty preserved in gardens, unless it be planted in wet ground: it is seldom injured by cold.

[**DISA**.

Lin. suppl. 59. n. 1423. Schreb. 1375. Berg. cap. 348. t. 4. Juss. 65. Lamarck encycl. 2. 290.

Class. 20. 1. Gynandria Diandria.

Nat. Order of *Orchideæ*.

GENERIC CHARACTER.

CAL. Spathe one-valved, acuminate, oblong, gaping longitudinally on one side.

COR. Petals three, ovate, spreading, large, nearly equal: the upper one unequal, somewhat horned obtusely at the base behind.

STAM. Filament subulate. Anthers two, connected into a lanceolate form, a little shorter than the corolla, subulate at the base, gaping, mounted on the style.—Dorsal petal of the stamens two-parted, shorter than the stamens. Divisions oblong, obtuse, converging.

PIST. Germ inferior, length of the spathe. Style tongue-shaped, short, hollowed at the base, two-horned backwards.

PER. Capsule oblong, three-valved.

^a Kalm.

^b Hort. kew,

SEEDS numerous minute.

ESSENTIAL CHARACTER.

Spathe one-valved. **Pet.** 3; the third less, two-parted, gibbous at the base.

SPECIES.

1. *Difa grandiflora*.

Lin. syst. 817. suppl. 406.

D. uniflora. Berg. cap. 348. t. 4. f. 7.

Orchis africana, fl. singulari herbaceo. Raii suppl. 586.

Horn shorter than the petals, with about two flowers on the stem.

2. *Difa racemosa*.

Lin. syst. 817. suppl. 406.

Horn shorter than the petals, flowers in racemes.

3. *Difa longicornis*.

Lin. syst. 817. suppl. 406.

Horn longer than the petals, scape one-flowered.

4. *Difa maculata*.

Lin. syst. 817. suppl. 407.

Horn conical very short, scape one-flowered.

DESCRIPTIONS, &c.

1. Stem a foot high, erect, quite simple, even. Leaves shorter than the stem; those next the root lanceolate-linear; those on the stem sheathing, alternate, three in number, the disk shorter than the sheath, acuminate at the end. Flower terminating, peduncled, inclined; sometimes two, and then the second comes out on a longer peduncle from the spathe of the former. This flower is very conspicuous and beautiful.

2. Of this we have no description.

3. Flower blue: beautiful and singular in its form.

4. Root-leaves oblong. Stem and sheath spotted with red. Flower blue.

These are all natives of the Cape. The first was found there by Bergius; and that, with all the rest, by Thunberg^a; from whom we expect farther information on this genus.

DISANDRA.

Lin. gen. Reich. n. 497. Schreb. 627. Juss. 99.

Cl. 7. 1. Heptandria Monogynia.

Nat. Order of *Pedicularæ*. Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, from five to eight-parted: divisions straightish; permanent.

COR. one-petalled, wheel-shaped: Tube very short. Border five-parted; divisions ovate.

STAM. Filaments from five to eight, bristle-form, from erect becoming patulous, shorter than the corolla. Anthers sagittate.

PIST. Germ ovate. Style filiform, length of the stamens. Stigma simple.

PER. Capsule ovate, length of the calyx, two-celled.

SEEDS several, ovate.

OBS. The flower varies very much as to number.

ESSENTIAL CHARACTER.

Cal. seven-leaved. **Cor.** seven-parted, flat. **Caps.** two-celled.

SPECIES.

1. *Difandra prostrata*. Trailing *Difandra*.

Lin. syst. 352. Reich. 2. 136. suppl. 32. 214. Curtis magaz. t. 218.

Sibthorpia peregrina. Lin. spec. 880. amæn. 3. 22. Pluk. phyt. t. 257. f. 5.

Leaves reniform crenate, peduncles in pairs.

2. *Difandra africana*.

Lin. syst. Reich. 137.

S. africana. Lin. spec. 880. amæn. 3. 22. Shaw afr. f. 149. (Chrysosplenii fol. planta, &c.)

Leaves orbiculate entire crenate, peduncles solitary.

DESCRIPTIONS, &c.

1. Stems from a foot to two feet in height, prostrate, round, pubescent. Leaves alternate, petioled, with about thirty notches, pubescent. Peduncles axillary, usually two together, but sometimes one or three, erect, filiform, one-flowered, higher than the petioles. Corollas yellow^a. The foliage greatly resembles that of ground-ivy, and the branches trail

^a Lin. suppl.

^a Lin. syst.

on the ground somewhat in the same manner to the length of several feet.—It varies extremely in the number of stamens, and in the divisions of the calyx and corolla^b. Seven is thought to be the most prevalent number of stamens, and five the most natural^c. Native of Madeira, and introduced about 1771. It flowers most part of the summer^d.

2. It is doubtful whether this be a distinct species. The parts of the flower are very inconstant in their number: seven is the most frequent; five the most natural, but most seldom seen, especially in the cultivated plant. Native of Africa^e.

PROPAGATION AND CULTURE.

1. It grows readily from cuttings. In the winter it must be kept in the greenhouse, in the summer it will bear the open air. It should be planted in rich earth, and plentifully watered in dry weather. It appears best in a pot placed on a pedestal, or in some elevated situation, where its branches may hang carelessly down^f.

DISERMAS. See *Salvia*.

DISPARAGO. See *Stoebe*.

DISTAFF-THISTLE. See *Atractylis*.

DITOCA. See *Mniarum*.

DITRICHUM. See *Didymodon*.

DITTANDER. See *Lepidium*.]

Dittany of Crete. See *Origanum*.

Dittany, White. See *Diellamnus*.

[DIURETICA. See *Arnica*.]

DOCK. See *Rumex*.

DODARTIA. (So named by Tournefort, from M. Dodart, member of the Academy of Sciences at Paris.)

Lin. gen. n. 780. Reich. 843. Schreb. 1047.

Tourn. 478. Gertn. t. 53. Juss. 119.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personata*—*Scrophulariæ* Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, bell form, five-toothed, with ten corners, tubular, nearly equal, flat, permanent.

COR. One-petalled, ringent. Tube cylindric, bent downwards, much longer than the calyx. Upper lip small, emarginate, ascending. Lower lip spreading, wider, three-cleft, twice longer, obtuse: middle division narrower.

STAM. Filaments four, ascending towards the upper lip, and shorter than it. Anthers small, roundish, twin.

PIST. Germ roundish. Style subulate, length of the corolla. Stigma compressed, oblong, obtuse, two-cleft, the lamellas converging.

PER. Capsule globose, two-celled.

SEEDS numerous, very small. Receptacle convex, growing to the dissepiment.

ESSENTIAL CHARACTER.

Cal. five-toothed. Cor. lower lip twice as long as the upper. Caps. two-celled, globular.

SPECIES.

1. *Dodartia orientalis*. Oriental *Dodartia*.

Lin. spec. 883. syst. 574. Reich. 3. 186. hort. cliff.

326. Mill. fig. t. 127. Tournef. itin. 3. t. 208.

Gertn. fruct. 245.

Leaves linear quite entire smooth.

[2. *Dodartia indica*.

Lin. spec. 883. Reich. 3. 186.

Leaves ovate serrate villose.]

DESCRIPTIONS, &c.

1. It has a perennial root, which creeps far under the surface, and sends out new stalks at a great distance from the parent plant; these stalks are firm, a little compressed, and grow a foot and half high, sending out several side branches. Leaves long, narrow, fleshy, opposite, of a deep green colour; those on the lower part of the stalk are shorter and broader than those above; those on the upper part of the stalk are entire; at these joints the flowers come out singly on each side the stalk, fitting close to it; they are near an inch long. The flower is of a deep purple colour, and appears in July, but rarely produces seeds in England.

^b Curtis.

^c Murray.

^d Hort. kew.

^e Linn. syst.

^f Curtis.

[The elegant Tournefort first discovered this plant near Corvirap in Armenia, not far from the foot of mount Ararat, on the 9th of August, 1700; and named it after Mons. Dodart, Physician to the Princess Dowager of Conti, one of the most learned men of that time, as he says, and no less esteemed for his modesty, than the purity of his manners. He thus describes it. Stem a foot and half high, straight, firm, smooth, woody, bright green, branched from the bottom and forming a round bush. Leaves an inch or fifteen lines in length, two or three lines wide, a little fleshy, toothed on the edge, especially the lower ones, for they are smaller towards the top of the plant and less toothed. Flowers axillary, towards the end of the branches, of a deep violet colour, eight or nine lines in length, tube a line in diameter, ending in two lips, the upper shaped like the bowl of a spoon, a line and half in length, cut into two pointed segments, the lower three lines long, rather rounded, but cut into three parts, of which the middle one is the smallest and most pointed; this lip is downy and towards the middle has some white hairs.

Linneus observes, that the flowers are alternate, racemed, and subsessile^a. Capsule membranaceous, thin, scored on each side, seldom opening spontaneously. Seeds angular, smooth, cinereous-brown^b. Cultivated 1739, by Mr. Miller^c.

2. Stems roundish, villose, somewhat branching. Leaves petioled, obtusely serrate. Raceme terminating with small leaves. Flowers opposite, pointing one way, subsessile. Calyx obtuse, villose. Corolla yellow, with the outer lip straight and short.—Native of India^d.]

PROPAGATION AND CULTURE.

1. It propagates very fast by its creeping roots, so that when it is once established in a garden, it will multiply fast enough; it loves a light dry soil, and may be transplanted either in autumn when the stalks decay, or in the spring before the new stalks arise.

[*Dodartia Linaria*. See *Antirrhinum bellidifolium*.

DODDER. See *Cuscuta*.

DODECAS. (So called from the number twelve prevailing in the stamens.)

Lin. suppl. 36. n. 1392. Gen. Schreb. n. 804.

Juss. 323.

Class. 11. 1. Dodecandria Monogynia.

Nat. order of *Calycanthemæ*. Myrti Juss. perhaps more allied to the *Salicariæ*?

GENERIC CHARACTER.

CAL. Perianth one-leafed, turbinate, permanent, half-four-cleft, superior; divisions ovate, spreading.

COR. Petals roundish, sessile, inserted into the calyx.

STAM. Filaments twelve, capillary, shorter than the calyx, inserted into the receptacle? Anthers oblong.

PIST. Germ half-superior. Style filiform, longer than the stamens. Stigma simple.

PER. Capsule ovate, one-celled, inferior, growing to a patulous calyx, within which the apex is naked and four-valved.

SEEDS numerous, oblong, minute.

OBS. Habit of *Lycium* or *Jussieuæ*.

ESSENTIAL CHARACTER.

Cor. five-petalled. Cal. half-four-cleft, bearing the corolla, superior. Caps. one-celled, connate with the calyx.

SPECIES.

1. *Dodecas furinamentis*.

Lin. syst. 445. suppl. 245.

DESCRIPTIONS, &c.

A shrub, having the appearance of *Lycium barbarum*, even, somewhat four-cornered; the branches opposite, short. Leaves opposite, obovate-oblong or wedge-shaped, subpetioled, even, obtuse, quite entire. Stipules none. Peduncles axillary, one-flowered, short; solitary, the length of the calyx. Bractes in pairs, minute, under the calyx. Calyx before it unfolds four-cornered, four-valved; turbinate at bottom, columnar. Petals inserted into the calyx at the divisions. Stamens inserted into the

^a Syst.

^b Gartner.

^c Hort. kew.

^d Linn. spec.

receptacle next the germ, not into the calyx. Native of Surinam. C. G. Dalberg^a.

DODECATHEON. (*From dōdeka, twelve, and Deo, gods.*)

Dodecatheos is the name of a plant in Pliny.)

Lin. gen. n. 200. Reich. 213. Schreb. 261. Juss.

97. Gærtn. 50. Meadia. Catesb. car. Ebret.

Mill. dict. 3 fig. t. 174.

Cl. 5. 1. Pentandria Monogynia.

Nat. Order of Precie.—Lyfimachix, Juss.

GENERIC CHARACTER.

CAL. Involucre many-leaved, many-flowered, very small. Perianth one-leaved, half five-cleft, permanent: divisions reflex, finally longer, permanent.

COR. One-petalled, five-parted. Tube shorter than the calyx. (naked at the throat) Border reflex: divisions very long, lanceolate.

STAM. Filaments five, very short, obtuse, seated on the tube. Anthers sagittate, converging into a beak.

PIST. Germ conic. Style filiform, longer than the stamens. Stigma obtuse.

PER. Capsule oblong, one-celled, gaping at the tip. (subcylindric, opening into five parts. G.)

SEEDS very many, small. Receptacle free, small.

ESSENTIAL CHARACTER.

Cor. rotate, reflex. Stam. placed on the tube. Caps. one-celled, oblong.

SPECIES.

1. Dodecatheon Meadia. Virginian Cowslip or Meadia.

Lin. spec. 207. Reich. 1. 415. amæn. 3. 16. Curt.

magaz. t. 12.

Meadia. Catesb. car. 3. t. 1. Trew. ebret. t. 12.

Mill. dict. 3 fig. t. 174. Gærtn. fruct. 233.

Auricula urfi virginiana, &c. Pluk. alm. t. 79. f. 6.

DESCRIPTION, &c.

Meadia has a yellow perennial root, from which come out in the spring several long smooth leaves, near six inches long, and two and a half broad; at first standing erect, but afterwards spreading on the ground, especially if it be much exposed to the sun: from among these leaves arise two, three, or four flower-stalks, in proportion to the strength of the roots, which rise eight or nine inches high; they are smooth, naked, and terminated by an umbel of flowers, which are purple, inclining to a peach-blossom colour. These appear at the end of april or the beginning of may; and the seeds ripen in july; soon after which the stalks and leaves decay, and the roots remain inactive till the following spring. [Each flower has a long slender peduncle, which is recurved, so that the flowers hang down^b. The capsule is of the substance of paper, rufescent. Receptacle columnar, pedicelled, from round acuminate, with excavations on it. Seeds ovate-rounded, turgidly lenticular, somewhat wrinkled, yellow-rufescent. Umbilicus in the middle of the belly, obscure^c.]

It is a native of Virginia, and other parts of North America, whence it was sent by Banister, to Bishop Compton, in whose curious garden at Fulham Mr. Miller first saw it growing in the year 1709; after which this plant was lost for several years in England, till it was again obtained from America [by Mr. Catesby, and cultivated in 1744, by Peter Collinson, Esq.^d] since which it has been propagated in great plenty. Mr. Mark Catesby named it Meadia, in honour of Dr. Richard Mead, who was a generous encourager of every branch of science, though no great botanist himself. [If we look over the list of those who have had plants named from them, we shall find many of very inferior note; and several who could produce no title to that honour, except their patronage of learning and learned men. Would not Linneus therefore have done better to leave the name of this illustrious physician, and elegant scholar, as a generic term to this elegant plant; than to select a whimsical name from Pliny, and to affix it to an american plant, which Pliny could not ever have seen? Meadia however remains as the

^a Linn. suppl.

^b Mill. fig.

^c Gærtner.

^d Hort. kew.

specific name, and the common appellation in English.]

PROPAGATION AND CULTURE.

This plant is propagated by offsets, which the roots put out pretty freely when they are in a loose moist soil and a shady situation; the best time to remove the roots, and take away the offsets, is in august, after the leaves and stalks are decayed, that they may be fixed well in their new situation before the frost comes on. It may also be propagated by seeds, which the plants generally produce in plenty; these should be sown in the autumn soon after they are ripe, either in a shady moist border, or in pots, which should be placed in the shade; in the spring the plants will come up, and must then be kept clean from weeds, and if the season proves dry, they must be frequently refreshed with water; nor should they be exposed to the sun, for while the plants are young, they are very impatient of heat, so that I have known great numbers of them destroyed in two or three days, which were growing to the full sun. These young plants should not be transplanted till their leaves are decayed, then they may be carefully taken up and planted in a shady border, where the soil is loose and moist, at about eight inches distance from each other, which will be room enough for them to grow one year, by which time they will be strong enough to produce flowers, and may then be transplanted into some shady borders in the flower-garden, where they will appear very ornamental during the continuance of their flowers.

At the first many supposed this plant to be tender, and planted it in warm situations and nursed it too much, whereby the plants were often killed; but by experience it is found to be so hardy, as not to be hurt by the severest cold of this country; but it will not thrive in a very dry soil, or where it is greatly exposed to the sun.

DODONÆA. (*So named in honour of Rembert Dodonæus or Dodoens, professor of medicine, a famous botanist of the 16th century; author of frugum historia, 1552; and Pemptades, 1583.*)

Lin. gen. n. 855. Reich. 520. Schreb. 654. Gærtn. t. 111. Jacqu. amer. 109. Juss. 375.

Cl. 8. 1. Octandria Monogynia.

Nat. Order of Dumosæ?—Terebintaceæ Juss.

GENERIC CHARACTER.

CAL. Perianth four-leaved, flat: leaflets ovate, obtuse, concave, deciduous.

COR. none.

STAM. Filaments eight, very short. Anthers oblong, bowed, converging, length of the calyx.

PIST. Germ three-sided, length of the calyx. Style cylindric, three-furrowed, upright. Stigma slightly three-cleft, a little acute.

PER. Capsule three-furrowed, inflated, three-celled: with large membranaceous corners.

SEED in couples, roundish.

OBS. Jacquin, Browne, and other eye-witnesses, incline us to think it a distinct genus.

ESSENTIAL CHARACTER.

Cal. four-leaved. Cor. none. Caps. three-celled, inflated. Seeds in couples.

SPECIES.

1. Dodonæa viscosa. Broad-leaved Dodonæa.

Lin. syst. 362. Reich. 2. 162. suppl. 218. hort. cliff.

144. fl. zeyl. n. 141. Gærtn. fruct. 2. 134. Jacqu.

amer. 109. pict. 56. Trew. ebret. 12. t. 9.

Brown. jam. 191. t. 18. f. 1. (Triopteris) Sloan.

jam. 2. 27. t. 162. f. 3. Raii dendr. 94. 17.

Rumph. amb. 4. t. 50. Pluk. phyt. t. 142. f. 1.

Plum. ic. t. 247. f. 2. Barrer. æquin. 109.

(Thlaspidioides.) Burm. zeyl. 55. t. 25. (Carpinus) Maregr. bras. l. 2. c. 13.

Ptelea viscosa. Lin. spec. 173. Mill. dict. n. 2.

Leaves oblong.

2. Dodonæa angustifolia. Narrow-leaved Dodonæa.

Lin. syst. 362. suppl. 218.

Leaves linear.

1. This sends up several stalks from the root, about the size of a man's arm, with several upright branches, covered with a light brown bark, which frequently separates from the wood, and hangs loose; leaves stiff, varying greatly in shape and size, some being four inches long, and an inch and a half broad; others not three inches long, and a quarter of an inch broad; they are spear-shaped, entire, and of a light green, growing with their points upward, and have very short foot-stalks. The flowers are produced at the end of the branches in a sort of raceme, each standing upon a slender foot-stalk about an inch long.

[This upright, branched shrub, growing about five feet in height, is entirely viscid and fetid. The younger branches are angular. Leaves oblong, with a bluntish point, attenuated at the base, quite entire, alternate, with scarcely any petiole, on tender plants that come out in the first months, usually repand or ferrate. Flowers in racemes, frequently varying much on the same branches. The natural number of leaflets in the calyx seems to be four; it is seldom found with five, and when it has only three, which is frequently the case, one of the leaflets is always larger than the rest, and scored with a longitudinal groove. The pistil is frequently deficient in one third part, and then the capsule has only two cells. Sometimes there are only seven stamens, and even six, but that happens very seldom. One seed in a cell is frequently abortive, and sometimes both*.

According to Gärtner, the capsule is membranaceous, thin, netted with veins, two-celled or three-celled, three-valved: the valves boat-shaped, the keel widened out into a membranaceous, broad, rounded edge; partitions fastened to the axis of the fruit, which continues after the valves have fallen off; it is three-sided, and the seeds are fixed to the middle of it by two very small tubercles. Seeds roundish, turgidly lenticular, but very sharp-edged towards the back, hard, smooth, black.

Browne says that this slender shrub seldom rises more than six or seven feet, (ten or twelve, *Sloane*); both the trunk and branches are very flexible and tapering. The taste of the whole plant is acerb and bitterish. In Jamaica it is called the *Switch Sorrel*. Native of the countries between the tropics.

In the Society isles it is dioecous, in New Zealand hermaphrodite*.—Introduced in 1690 by Mr. Benthick*.

2. This resembles the foregoing, but the leaves are lanceolate-linear. The fructification is polygamous*. Native of the Cape of Good Hope. Cultivated 1758, by Mr. Miller. It flowers from may to august*.]

PROPAGATION AND CULTURE.

1. This plant is propagated by seeds, which, if obtained fresh from abroad, will rise easily upon a hot-bed: when the plants are fit to remove, they should be each planted in a separate small pot filled with light loamy earth, and plunged into a hot-bed of tanners' bark, shading them from the sun till they have taken new root; then they should have free air admitted to them every day in proportion to the warmth of the season, for they must not be drawn up weak, nor should they have too much water. In the autumn the plants must be removed into the stove, where they should have a temperate warmth in winter, but during that season little water should be given them; nor should they have too much heat, for either of these will soon destroy them: as the plants obtain strength, they will become more hardy, and may be set abroad in the open air for two or three months in the heat of summer, but it should be in a sheltered situation; in winter they must be placed in a stove, kept to a moderate temperature of warmth, for the plants will not live in a green-house here.

This was formerly shewn for the Tea-tree in many

* Jacquin. b Forster. c Hort. kew.
d Linn. suppl. e Hort. kew.

of the European gardens, where it many years passed for it among those who knew no better.

[2. The second sort is less tender, and requires only the protection of a green-house or glass case.

DOGBERRY-TREE. See *Cornus*.

DOG'S-BANE. See *Apocynum*.

DOG'S-GRASS. See *Triticum*.

DOG'S-MERCURY. See *Mercurialis*.

DOG'S-TAIL-GRASS. See *Cynofurus*.]

DOG'S-TOOTH. See *Erythronium*.

DOGWOOD. See *Cornus*.

DOLICHOS. (*Δολιχος* of *Theophrastus*. From *δολιχος*, long; the pod or legume being generally lengthened out.)

Lin. gen. n. 867. *Reich.* 941. *Schreb.* 1181.

Gärtn. t. 150. *Juss.* 356.

Class. 17. 4. *Diadelphia Decandria*.

Nat. order of Papilionaceæ or Leguminosæ.

GENERIC CHARACTER.

CAL. Perianth one-leaved, very short, four-toothed, equal; the superior tooth emarginate.

COR. papilionaceous.

Standard roundish, large, emarginate, the whole reflex. Two *calluses* oblong, parallel and longitudinal, growing to the standard beneath towards the base, compressing the wings, not hollowed on the back.

Wings ovate, obtuse, length of the keel.

Keel lunulate, compressed, beneath converging closely, length of the wings, ascending at the tip.

STAM. Filaments diadelphous, (simple and nine-cleft,) the simple one curved at the base. *Antbers* simple.

PIST. Germ linear, compressed; *Style* ascending. *Stigma* bearded, running on inwardly from the middle to the tip of the style, which on the fore part is callosous, obtuse.

PER. Legume acuminate, large, oblong, two-valved, two-celled.

SEEDS several, elliptic, usually compressed.

QBS. The habit is that of *Phaseolus*; the Keel, which is not spiral, distinguishes the genus.

ESSENTIAL CHARACTER.

Two parallel, oblong calluses at the base of the standard, compressing the wings underneath.

SPECIES.

* *Twining.*

[1. *Dolichos benghalensis.*

Lin. syst. 657. *Jacqu. hort.* 2. t. 124.

Shrubby; legumes ending in long dagger points.]

2. *Dolichos Lablab.* *Black-seeded Dolichos.*

Lin. spec. 1019. *Reich.* 3. 446. *hort. upf.* 214.

Hasselqu. itin. 483. *engl. edit.* 252. *Gärtn.*

fruct. 2. 323.

Phaseolus. *Riv. tetr. t.* 29. f. 4.—*ægyptiacus*, nigro semine. *Baub. pin.* 341.

P. niger Lablab. *Alpin. ægypt. t.* 75. *Vest. ægypt.*

27.—*peregrinus* 14. Lablab. *Clus. hist.* 2. 227.

Lablab *Alpini.* *Baub. hist.* *Raii hist.* 888.

Legumes ovate-sabre-shaped, seeds ovate, with a bowed eye towards one end.

[3. *Dolichos sinensis.* *Chinese Dolichos.*

Lin. spec. 1018. *Reich.* 3. 446. *amæn.* 4. 326.

Jacqu. hort. 3. 39. t. 71. *Rumph. amb.* 5.

t. 134. *Burm. ind.* 158. *Lour. cochinch.* 436.

Legumes pendulous, cylindric, torulose; peduncles erect, many-flowered.]

4. *Dolichos uncinatus.* *Hook-podded Dolichos.*

Lin. spec. 1019. *Reich.* 3. 446. *Plum. spec.* 8:

ic. 221.

Teramnus volubilis. *Swartz prodr.* 105. *Brown. jam.* 290. 1. *Sloan. jam.* 1. 182. (*Phaseolus*.)

Legumes cylindric, hirsute, with a hooked subulate claw at the end, peduncles many-flowered, stem rough with hairs.

[5. *Dolichos luteolus.*

Lin. syst. 657. *Jacqu. hort.* 1. t. 90.

Legumes in several cylindric beads, seeds rounded.

6. *Dolichos unguiculatus.* *Bird's-foot Dolichos.*

Lin. spec. 1019. *Reich.* 3. 446. *hort. upf.* 214.

Jacqu. hort. 1. t. 23. *Rumph. amb.* 5. 381.

t. 138? *Lour. cochinch.* 436.

Legumes in subcylindric beads, recurved, and concave at the tip.

7. *Dolichos*

7. *Dolichos tranquebaricus*.
Lin. syst. 657. *Jacqu. hort.* 2. t. 70.
 Legumes few, in cylindric heads, with a straight dagger point.
8. *Dolichos ensiformis*. Horse-Bean.
Lin. spec. 1022. *Reich.* 446. *hort. cliff.* 360.
Brown. jam. 291. 2. *Sloan. jam.* 1. 177. t. 114.
 f. 1, 2, 3. (Phaseolus.) *Rumph. amb.* 5. t. 135.
 f. 1. *Rheed. mal.* 8. t. 44.
 Legumes gladiate, three-keeled at the back, seeds arilled.
9. *Dolichos tetragonolobus*.
Lin. spec. 1020. *Reich.* 447. *Lour. cochinch.* 437. *Rumph. amb.* 5. t. 133. *Burm. ind.* 159. (Lobus quadrangularis.)
 Legumes quadrangular-membranaceous.
10. *Dolichos sesquipedalis*. Long-podded Dolichos.
Lin. spec. 1019. *Reich.* 447. *Jacqu. hort.* 1. t. 67.
 Legumes subcylindric, even, very long.
11. *Dolichos altissimus*. Tall Dolichos.
Lin. spec. 1019. *Reich.* 447. *mant.* 101. *Jacqu. amer.* 203. t. 182. f. 85. *piet.* 100. t. 190. *Rheed. mal.* 8. 63. t. 36? (Kaku-valli.) *Lour. cochinch.* 438. see n. 25.
 Legumes racemed, rough-haired, equal, seeds surrounded with a scar, leaves smooth on both sides.]
12. *Dolichos pruriens*. Horse-eye Bean.
Lin. spec. 1019. *syst.* 657. *Reich.* 447. *mant.* 441. *Jacqu. amer.* 202. t. 122. *piet.* 99. t. 188. *Lour. cochinch.* 438. *Pluk. phyt.* t. 214. f. 1. *Sloan. jam.* 1. 37. (Phaseolus.) *Brown. jam.* 290. 1. t. 31. f. 4. (Stizolobium.) *Rumph. amb.* 6. t. 142. *Rheed. mal.* 8. p. 61. t. 35. *Burm. zeyl.* 191.
 Legumes in racemes, valves somewhat keeled, rough-haired, peduncles by threes.
13. *Dolichos urens*. Cow-itch Dolichos.
Lin. spec. 1020. *syst.* 658. *Reich.* 448. *Jacqu. amer.* 202. t. 182. f. 84. *piet.* 100. t. 189. *Pluk. phyt.* t. 213. f. 2. *Plum. ic.* t. 107. *Sloan. jam.* 1. 178. (Phaseolus.) *Brown. jam.* 295. (Zoophthalmum.) *Marcgr. bras.* 1. 1. c. 10. 19. (Mucuna.)
 Legumes in racemes, with furrows transversely lanceolate; the seeds surrounded with a scar.
- [14. *Dolichos minimus*. Small Dolichos.
Lin. spec. 1020. *Reich.* 448. *hort. cliff.* 369. t. 21. *upf.* 214. *Jacqu. obs.* 1. 34. t. 22. *Sloan. jam.* 1. 182. t. 115. f. 1. *Brown. jam.* 294. 7.
 Legumes in racemes, compressed, with four seeds in them, leaves rhomb-shaped.
15. *Dolichos lineatus*.
Lin. syst. 658. *Thunb. jap.* 280.
 Legumes in racemes, oblong, three-keeled.
16. *Dolichos capensis*.
Lin. spec. 1020. *Reich.* 449. *amæn.* 6. *afr.* 44.
 Peduncles with one or two flowers, legumes elliptic, compressed, leaves smooth.
17. *Dolichos scarabæoides*. Silvery-leaved Dolichos.
Lin. spec. 1020. *Reich.* 449. *fl. zeyl.* n. 282. *Pluk. alm.* t. 52. f. 3.
 Leaves ovate, tomentose, flowers solitary, seeds two-horned.
18. *Dolichos incurvus*.
Lin. syst. 658. *Thunb. jap.* 280.
 Legumes solitary, incurved, three-keeled.
19. *Dolichos bulbosus*. Bulbous Dolichos.
Lin. spec. 1021. *Reich.* 449. *Lour. cochinch.* 439. *Pluk. alm.* t. 52. f. 4. *Rumph. amb.* 5. t. 132. f. 2. (Cacara bulbosa.)
 Leaves smooth, many-angled, toothed.
20. *Dolichos trilobus*.
Lin. spec. 1021. *Reich.* 449. *hort. cliff.* 360. *Lour. cochinch.* 439. *Burm. ind.* 160. t. 50. f. 1. *Pluk. alm.* t. 214. f. 3. (Phaseolus.)
 Lateral leaflets gibbous on the outside, the middle one three-lobed.
21. *Dolichos aristatus*.
Lin. spec. 1021. *Reich.* 449.
 Peduncles two-flowered, axillary; legumes linear, compressed, ending in a straight awn.
22. *Dolichos filiformis*. Cat's-claw Dolichos.
Lin. spec. 1021. *Reich.* 450. *amæn.* 5. 402. *Brown. jam.* 294. n. 6.
 Leaflets linear, obtuse, mucronate, smooth, pubescent underneath.
23. *Dolichos purpureus*. Purple Dolichos.
Lin. spec. 1021. *Reich.* 450. *Lour. cochinch.* 438. *Burm. ind.* 160.
 Stem smooth, petioles pubescent, wings of the corolla spreading.
24. *Dolichos regularis*.
Lin. spec. 1022. *Reich.* 450. *Gron. virg.* 82.
 Leaves ovate, obtuse, peduncles many-flowered, petals equal in size and form.
25. *Dolichos lignosus*. Woody Dolichos.
Lin. spec. 1022. *Reich.* 450. *hort. cliff.* 360. t. 20. *Smith spicil.* 19. t. 21. *Jacqu. amer. piet.* 100? *Rumph. amb.* 5. t. 136.
D. altissimus. *Lour. cochinch.* 438?
 Stem perennial, peduncles forming a head, legumes stiff and straight, linear.
26. *Dolichos polystachios*.
Lin. spec. 1022. *syst.* 658. *Reich.* 450. *Gron. virg.* 2. 106. 1. 172. *Thunb. jap.* 281.
 Stem perennial, racemes very long, pedicels in pairs, legumes acuminate, compressed.
27. *Dolichos reticulatus*. Netted-leaved Dolichos.
Ait. hort. kew. 3. 33.
 Leaves ovate, acute, wrinkled, netted, villose, racemes few-flowered.
28. *Dolichos luteus*.
Swartz prodr. 105.
 Twining, flowers in a sort of spike, legumes subcylindric, smooth, leaves roundish-rhomboid, obtuse, entire, smooth.
29. *Dolichos montanus*.
Lour. cochinch. 440.
 Stem shrubby, climbing, leaflets ovate-rhomboid, five filaments with oblong anthers, and five alternate roundish.
30. *Dolichos hastatus*.
Lour. cochinch. 442.
 Stem procumbent, leaves subhastate, peduncles many-flowered, erect.
31. *Dolichos rotundifolius*.
Vahl symb. 2. 81. *Rheed. malab.* 8. 83. t. 43. (Katu tsjandi.)
 Legumes racemed, compressed, somewhat hairy, sword-shaped, leaflets oval-roundish, smooth.
32. *Dolichos ensiformis*. Scymitar-podded Dolichos.
Lin. spec. 1022. *Reich.* 451. *Lour. cochinch.* 437.
 Stem suberect, legumes scymitar-shaped, three-keeled, seeds arilled.
33. *Dolichos Soja*.
Lin. spec. 1023. *syst.* 659. *Reich.* 451. *fl. zeyl.* n. 534. *mat. med.* 171. *Kämpf. amæn.* t. 838. (Phaseolus.) *Thunb. jap.* 282. *Lour. cochinch.* 441. *Rumph. amb.* 5. t. 140. (Cadelium).
 Stems flexuose, racemes axillary, erect, legumes pendulous, hispid, containing about two seeds.
34. *Dolichos Catiang*.
Lin. syst. 659. *Reich.* 451. *mant.* 269. *Lour. cochinch.* 442. *Burm. ind.* 161. *Rumph. amb.* 5. t. 139. f. 1. *Rheed. mal.* 3. t. 41.
 Legumes double, linear, somewhat erect.
35. *Dolichos biflorus*. Two-flowered Dolichos.
Lin. spec. 1023. *Reich.* 451. *Lour. cochinch.* 441. *Burm. ind.* 161. *Pluk. alm.* t. 213. f. 4. (Phaseolus).
 Stem perennial, even, peduncles two-flowered, legumes erect.
36. *Dolichos repens*. Sea-side Dolichos.
Lin. spec. 1022. *Reich.* 451. *amæn.* 5. 402. *Brown. jam.* 293. 5.
 Stem creeping, leaves pubescent, ovate, flowers racemed, in pairs, legumes linear, columnar.
37. *Dolichos roseus*.
Swartz prodr. 105. *Brown. jam.* 293. 4.
 Stem creeping, ascending, leaflets roundish, shining, flowers in racemes, legumes three-keeled at the back.
38. *Dolichos*

38. *Dolichos fabæformis*.*L'Herit. stirp. nov.* 6. 163. t. 78.*Pforalea tetragonoloba.* *Lin. syst.* 686. *Reich.*3. 544. *mant.* 104.*Stem erect, angular, leaves villose, glaucous, legumes stiff and straight, subquadrangular.*

DESCRIPTIONS, &c.

Most of the species are annual, and natives either of the East or West-Indies.—They are chiefly herbaceous, and furnished with twining stalks. The leaves are ternate and petioled, with stipules distinct from the petiole; the end-leaflets are jointed with the terminating petiolule, two-awned below; the side ones have only one awn; the awns resemble stipules; the flowers are frequently in spikes, and axillary; the legume is often smooth, sometimes but seldom villose or prurient. The lobes of the corolla are distinct from the seed-leaves^a. The species are numerous. Mr. Miller affirms that he has cultivated more than sixty, besides many varieties, and such probably are several which are reputed to be species. Some of them, wanting the calluses, should perhaps be removed to another genus. See *Teramnus*. Gærtner says, that the species may be more accurately determined, by observing whether the seed has any hilum (eye or umbilical scar,) and if it has, whether it is placed on one side, or annular.

1. This is a perennial, with a stem somewhat roughish to the touch, and scandent, as well as producing several branches: leaves roundish-ovate, ending in a point, furnished with a bristle: stipules lanceolate; peduncles racemose, four or five inches long; flowers seated on very short peduncles, uncertain as to number; snow-white, and lightly odorous: Legume oblong, pointed, compressed, first green, afterwards growing pale: seeds few, roundish-oblong, compressed, brown, with deeper-coloured points, and with a long protuberant, snow-white hilum^b.

2. Legumes scabrous at the back^c, compressed, flat, crenulate at both futures, consisting of several cells: partitions very thin, composed of a cellular snowy-white membrane. Seeds three or five, flattened a little, smooth, but not shining, black or ferruginous, edged on one side with a fungose snowy-white callus, proceeding from the umbilicus: they have no albumen; the embryo is curved and white; the cotyledons elliptic and plano-convex; the plume two-leaved, the leaflets cordate-acuminate, veined, doubled together; the radicle bent in, and centrifugal^d. Stems and branches round, scabrous backward. Peduncles forming half whorls^e.

Dolichos ensiformis of Thunberg approaches nearer to this, than to the *D. ensiformis* of Linneus, from which it is certainly different^f.

Alpinus says that this grows wild in Egypt. Hasselquist, however, is certain that it does not grow wild in Lower Egypt, but is only cultivated there in gardens. The Egyptians call it *Ful Frangi* or European Bean: hence we might conjecture that the Europeans first brought it into Egypt. The inhabitants make pleasant arbours of it: they not only support it with trellis work, but fasten it with twine, by which means the leaves form an excellent covering, and an agreeable shade.

It was cultivated in 1714, by the Dutchess of Beaufort^g.

3. Stem annual, long, round, slender, twining, somewhat branched. Leaves ternate, broad-lanceolate, smooth, with two or three lanceolate stipules at the base of the common petiole. Flowers pale violet, on few-flowered, suberect, axillary peduncles: standard ascending, very blunt. Legume linear, from one to two feet in length, subcylindric, torulose, smooth, pendulous. Seeds oblong-kidney-form, pale, many^h. Loureiro is of opinion, that *D. sesquipedalis*, n. 18. is not different from this.

Native of India, Amboina, China and Cochinchina.—Introduced 1776, by M. Thouin.

4. This is removed by Browne and Swartz to a new genus, under the name of *Teramnus*, because it wants the calluses at the base of the standard in the corolla, and differs in other respects. See *Teramnus*. It is a native of Jamaica.

5. Stem rather angular, branches round; a scandent plant: branches three or four cubits long: leaves ovate, entire, subacute, glossy. Stipules small and roundish: peduncles axillary, supporting from six to ten elegantly yellow flowers: the stigma is much bearded; the legume smooth and obtuseⁱ. Native of the Society isles^k.

6. An annual smooth plant, with climbing stem: leaves lanced-ovate, and sharp; peduncles supporting but few flowers, and upright; flowers whitish. Stigma long and bearded: legume smooth, ending in a recurved sharp-pointed tip, which is channelled on its upper part. Seed whitish, with a snow-white hilum^l.

Native of the West-Indies. Introduced 1780, by W. Ph. Perrin, Esq.^m. Loureiro says, it is a native of China, whence it was brought into Portugal.

7. This is extremely like the *Dolichos unguiculatus*, but flowers at a different time of the year, and is more climbing. The whole plant is very smooth: the vexillum or standard of the flowers is pale yellow behind, and blueish-red in front; the wings more blue, and the keel white. The legume differs from that of the *unguiculatus* merely in being slendererⁿ.

8. This is a native of Jamaica, and is distinguished by its large falcated legume, and white seeds, with a saffron-coloured hile. The stem is three or four feet high: the shoots run much farther: the legumes are between ten and fourteen inches in length, and generally contain ten or eleven seeds^o.

9. Stem herbaceous, round, slender, scandent, long, branching. Leaflets broad-lanceolate, smooth, pale green: stipules lanceolate, minute. Flowers pale blue, on long, lateral, few-flowered peduncles. Legume thick, half a foot long, with a thin, lacerated, connate membrane at each of the four corners. Seeds about eight^p. Native of the East-Indies, China and Cochinchina.

10. Appearance of a *Phaseolus*. Standard of the flower pale above, reddish within. Legume more than a foot and half in length, roundish, with a little obtuse gibbous hook at the end^q.—Native of the West-Indies. Introduced 1781, by Mr. Francis Masson^r.

11. This climbs the highest trees, whence hang elegant wreaths of flowers in close racemes, on peduncles frequently more than twelve feet in length. The proper pedicels are short, and in threes: the flowers void of scent, an inch and half long, with a ferruginous calyx, a violet-blue standard and wings, and a yellowish keel; the whole of the stamens and pistil rise surprisingly, and are inclosed within the convoluted standard. Native of the island of Martinico^s.

Loureiro applies Rumphius's synonym of *Cacara perennis*, t. 136, which Linneus gives to *D. lignosus* (see n. 25.), to his *D. altissimus*; which he says agrees better, if the perennial stalk be excepted, with the *altissimus* of Linneus than with the *lignosus*: he suspects that this and the *lignosus* may not be specifically different.

12. Leaflets rough with hairs underneath. Calyx campanulate, five-toothed, the middle tooth shorter. Banner very short, three times less than the other petals, ovate: keel linear, acute, boat-shaped at the end. Four alternate filaments, somewhat club-shaped, larger. Legume compressed, inflex at the base, reflex at the tip^t.

Common in all parts of the West-Indies, and rising to the top of the tallest trees, or spreading

^a Jussieu.^b Jacqu. hort.^c Linn. spec.^d Gærtner.^e Linn. spec.^f Kämpf. ic. select.^g Hort. kew.^h Loureiro.ⁱ Jacqu. hort.^k Forster.^l Jacqu. hort.^m Hort. kew.ⁿ Jacqu. hort.^o Linn. hort. cliff. and^p Brown. jam.^q Loureiro.^r Linn. spec.^s Hort. kew.^t Jacqu. amer.^u Linn. mant.

wide among lower bushes. Stems round and slender. Leaflets oval and villose, always three on every foot-stalk. Flowers dark purple, in spikes at the axils of the ribs. Legumes beset thickly with short, rigid hairs, occasioning an itching when handled. A decoction of the roots is reckoned a powerful diuretic, and cleanser of the kidneys. A vinous infusion of the pods (twelve to a quart) is said to be a certain remedy for the dropsy: the dose half a pint, when made in beer. In the Windward islands, they make a syrup of the pods, which is said to be very effectual against worms.—Native of both Indies, according to Linneus, and of Cochinchina, according to Loureiro. Introduced in 1781, by Mr. Gilbert Alexander*.—This may be true of the Kew garden; but had it not been cultivated before by Mr. Miller and others?

13. Stems round. Leaflets subovate, quite entire, acuminate, the upper surface smooth, the lower covered with a shining silvery down that is hardly perceptible. Racemes simple, pendulous, scarcely ever longer than the leaves. Proper peduncles one-flowered, in threes, placed closely at the end of the raceme, and hence forming a very elegant pendulous wreath of about eighteen flowers; these have no scent, are about two inches long, have a ferruginous calyx, and a yellow corolla, with the lower edge of the wings red. Legume seven inches long, wrinkled. The seeds, from their resemblance to an eye, are called by the French *Yeux bourrique*, or Afs's eye^y. In our West-India islands, for the same reason, they have the name of *Ox-eye Bean*.

This also climbs to the top of the tallest trees, throwing down its long slender flower-stalks to a moderate distance from the axils of the upper ribs, from whence they generally rise: these are not above the thickness of a common packthread, but seldom under four or five feet in length, and bear the flowers in clusters at their extremities^z. Jacquin, however, thinks it probable, that by this description Browne may have confounded this species with the altissimus.

Native of the West-Indies. Cultivated 1691, by the Dutchess of Beaufort^a. This and the foregoing are perennial and shrubby. The surface also of the legumes are covered with prurient hairs.

14. This climbs three or four feet in height, and has numerous branches. Leaves glaucous. Racemes stiff. Wings of the corolla yellow; standard brownish red, turning blue as it withers. Legumes villose and brown, commonly containing only two seeds. According to Linneus there are four^b. Browne calls it small fetid *Dolichos*. In Curaçoa it has the name of *Vrattekruyt* or Wart-herb, the leaves bruised with salt, being reputed to cure warts.

Native of Jamaica, and according to Jacquin of all the Caribbee islands. Introduced 1776, by Monf. Thouin^c.

15. Stem subangular, smooth. Leaflets smooth, ovate, obtuse with a point, marked with lines, equal, an inch and half in length, the side ones on short, the middle one on a long petiole. Stipules very small, bristle-form. Legumes rounded in front, straight at the back, marked with three lines, the side ones larger than the middle line, acute, smooth, two inches long.—It differs from *D. ensiformis* in the leaves being ovate-oblong, not gibbous; obtuse, not acute; thick, and marked with lines, not three-nerved: in having the legumes straight at the back and oblong, not scymitar-shaped and curled. Native of Japan^d. Thunberg ascribes the *Reedfu* of Kämpf. amoen. 5. 836. to this species. See n. 32.

16. Stem filiform, angular, even. Stipules ovate, acute, striated, very small. Leaves petioled; leaflets ovate-oblong, acuminate, veined. Peduncles long. Legumes acute at both ends, the back suture straightest, smooth, containing usually two seeds^e. Native of the Cape of Good Hope.

17. Stem scabrous. Leaves petioled; leaflets obtuse, veined underneath, soft. Flowers single from the axils. The seeds have two processes like the antennae of a beetle, whence the name^f. Native of the East-Indies. Introduced 1773, by Jos. Nich. de Jacquin, M. D.^g.

18. Stem striated, smooth. Leaflets oblong, acute, entire, smooth, paler underneath, nerved, two inches broad, a hand in length, equal; the side ones on very short petioles, the middle leaflet on a longer. Flowers axillary, solitary, peduncled. Peduncle round, bent round at the end, and smooth. Legume ensiform, with a point at the end bent in, smooth, a short span in length.—It differs from *D. ensiformis* in having the flowers solitary from the axils; the leaves oblong, and not gibbous on one side; the legumes bent in, not scymitar-shaped, and bent back; and the peduncle bending round:—from *D. lineatus*, in the leaves being broad at the base, gradually acuminate, three-nerved, thinner; the legume inflex, ensiform, acuminate, waved, solitary. Native of Japan^h.

19. Stem perennial, suffruticose, long, round, smooth, branched, without any stipules. Leaves roundish-angular, ternate, acuminate, petioled. Flowers terminating, in long racemes. Calyx cup-shaped, four-cleft, the upper segment shorter, emarginate. Corolla pale violet, with an ovate, entire, converging standard. Legume compressed, linear, four inches long, slightly bowed, divided across. The root consists of roundish, tailed, juicy, white tubers in bundles: these are eaten both raw and dressed, but not the seedsⁱ.

Native of both Indies. Introduced 1781, by Mr. Francis Maffon^k.

20. Stem perennial, suffruticose, round, very long, branched, twining or creeping when it lies on the ground, hirsute. Leaves petioled, with two-horned stipules: leaflets three-lobed, acuminate, pubescent. Flowers purple, in long terminating and lateral spikes; with a large yellow spot on the middle of the standard. Legume four inches long, linear, straight, compressed, divided across between the seeds, which are about eight in number, and of a rufous colour. The root is composed of a few long tubers in bundles, they are two feet long, subcylindric, fibrose-fleshy, of a pale colour, and eatable when boiled; but not the legumes^l. Loureiro doubts whether this be the plant of Plukenet and Burman, since these authors make no mention of the remarkable large tubers.

Native of the East-Indies. Cultivated in China and Cochinchina.

21. Stem round. Leaflets even, ovate-oblong, acuminate. Legumes straight and stiff, ending in a filiform, stiff, sharp awn, an inch in length. Native of America^m.

22. This grows among bushes, but seldom stretches above three or four feet in length. The pods are long and compressed; the stigma or top of the style is almost naked. It is used as a purgative ingredient in diet-drinks, and is said to answer well in hydropic cases. Native of Jamaica, where it is called Cat's-clawsⁿ.

23. Stem purplish. Leaflets subcordate, smooth, netted underneath with purple veins. Calyxes covered with two bractes. Corolla bright purple: keel violet below the tip. Legume compressed^o. Loureiro adds, that the stem is perennial, hispid, and branched: the leaflets sharp, short, with purple veins, on hairy petioles: stipules in fours, awl-shaped: the calyx of the same colour with the corolla: the flowers in long, erect, terminating spikes: legumes three inches long, broad and flat, smooth, purplish: seeds compressed-ovate, surrounded with a scar. The legumes, when young and fresh, are sapid and salubrious. Native of both Indies. Cultivated in China and Cochinchina.

* Browne.

^z Browne.

^c Hort. kew.

* Hort. kew.

^a Hort. kew.

^d Thunberg.

^y Jacq. amer.

^b Jacq. obs.

^e Linn. amoen.

^f Linn. zeyl.

^g Loureiro.

^h Linn. spec.

^g Hort. kew.

^k Hort. kew.

ⁿ Browne.

^h Thunberg.

ⁱ Loureiro.

^o Linn. spec.

Loureiro has another sort, which he calls *D. albus*, and is not very different from this, only more tender and sapid. It is *Cacara alba* of Rumphius, 5. t. 137. The stem is smooth and white: the leaflets three-cornered-rounded, pubescent, soft, pale, on smooth petioles: stipules in pairs, acute, short: flowers white, in short subterminating racemes, with a very wide, reflex standard: legumes smooth, but tubercled on the back, and beaked. This is also cultivated in China and Cochinchina.

24. Native of Virginia.

25. Root woody, perennial. Stem woody, supple, much branched, roundish, striated, smooth: branches alternate, very long and slender, but little subdivided, round, striated, somewhat downy, leafy, many-flowered. Leaves alternate, on long foot-stalks, ternate or rather binate with an odd leaflet: common foot-stalk roundish, channelled above, swelling and purplish at the base; partial ones very short, swelled, incurved: leaflets rhomboid, elongated, acute, entire, obsoletely three-nerved; bright green and shining above, glaucous beneath. Stipules entire, sharp, somewhat triangular, downy on the margin, dark purple at the base, two larger at the bottom of the common foot-stalk, and two smaller, lanceolate at the insertion of the partial foot-stalks. Racemes axillary, solitary, erect, having from three to six flowers in a little head. Peduncle simple, very long, striated, angular in the upper part; pedicels generally two together, short, downy, one-flowered. Bractes lanceolate, acute, hairy. Flowers nodding a little, rose-coloured with a purplish keel. Calyx smooth, thickly ciliated on the edge. Legume an inch long, a little recurved, brownish, smooth. Seeds black^p.

Native of the East Indies. Introduced 1776, by M. Thouin^q.

26. Stem becoming shrubby, often round, smooth, very long. Leaves alternate, unequally pinnate, smooth: leaflets about six pairs, opposite, on very short petioles, ovate, acuminate, entire, smooth, pale underneath, an inch long, the odd lobe on a longer petiole. The flowers from the same bud with the leaves, in racemes often a foot in length. Pedicels scattered, opposite and alternate, short, one-flowered. It varies with white and with purple corollas; with larger hirsute, and with smaller smooth legumes.

Native of Japan, where it is frequently cultivated for arbours^r. Also of Virginia.

27. Native of New South Wales. Introduced 1781, by Sir Joseph Banks, Bart.—Shrubby^s.

28. Native of Jamaica^t.

29. Roots subtuberosus, hard, long, in bundles. Stem long, branched. Leaflets large, tomentose, entire. Flowers wholly purple, in long lateral spikes. Stamens five longer, with oblong anthers, five alternately shorter, with roundish anthers. Legume linear, straight, compressed, separated between the seeds; which are compressed and suborbiculate.

Native of the mountain woods of Cochinchina.

This species is very nearly allied to *D. bulbosus* and *trilobus*, especially in the tuberosus root, linear legumes divided between the seeds, styles and stigmas not pubescent. Had not Linneus ranged these under *Dolichos*, Loureiro would have supposed that all three belonged to another genus.

30. Stem annual, long, round, branched. Leaves three-nerved, smooth. Flowers yellow, axillary, on long, striated peduncles. Legume linear, straight, subcylindric. Seeds ovate, pale, esculent. Cultivated on the eastern coast of Africa^u.

31. Stem smooth, woody, angular at top. Leaflets oval, the end one roundish; entire, emarginate, veined: petiole a little longer than the leaflets, scarcely hairy; petiolules purple, hairy. Racemes axillary, half a foot long. Peduncles with remote tubercles, almost as big as Coriander seeds, purple

at top. Flowers two or three at each tubercle, on very short pedicels. Bractes two, roundish, caducous, at the base of the flower. Calyx bell-shaped, smooth. Corolla large, purple. Legumes three inches long, oblique at both ends, acute, with very minute hairs pressed close. — *D. altissimus* differs from this in having the calyxes and wings villose at the base^v.

32. Stem perennial, suffruticose, scandent, long, branched, smooth. Leaflets acute, wrinkled, smooth. Stipules bristle-shaped, very small. Flowers violet-coloured, on many-flowered, axillary peduncles. Calyx tubular, two-lipped: upper-lip bifid; lower three-toothed, shorter. Wings and keel sickle-shaped, equal to the standard. Filaments equal, with ovate, nodding anthers. Legume large, compressed, thicker at the back, three-nerved, reflex at the tip, acuminate. Seeds five or six, large, compressed-ovate.

Native of China and Cochinchina; cultivated for arbours, not for food.—There is a variety, with legumes twice as long, and flatter, with blunter leaves, and other minute differences^w.

Here are two species, this and n. 8. bearing the same name. They are however different; that probably from the West, this from the East Indies. The plant of Rumphius (t. 135. f. 1.) probably belongs to this; but whether it is Thunberg's *ensifomis* (p. 279.) I cannot say. Kämpfer's *Reedsu* is referred by him to *D. lineatus*. See Kämpf. ic. select. t. 25.

Native of the East Indies. Introduced 1778, by Mr. William Roxburgh^x.

33. Stem round at bottom and smooth; above striated, very hirsute, a foot and more in height. Leaves petioled, hirsute: leaflets petioled, ovate, obtuse with a point, entire, the middle one on a longer petiole and larger, an inch in length: petiole striated, hirsute, a finger's length. Flowers in short, erect, hirsute racemes: subsessile, from three to five together. Corollas purple, scarcely larger than the calyx^y.

Native of the East Indies, Ceylon, Japan, &c.

The seeds, which are usually called *Miso* in Japan, are put into soups, and are the most common dish there, inasmuch that the Japanese frequently eat them three times a day. The *Soja* of the Japanese, which is preferred to the *Kitjap* of the Chinese, is prepared from these seeds, and is used in almost all their dishes, instead of common salt. The Chinese also have a favourite dish made of these seeds, called *Tau hu* or *Tau bu*, which looks like curd, and though insipid in itself, yet with proper seasoning is agreeable and wholesome^z.

34. Stem annual, a foot and half high, roundish, rugged, branched. Leaflets broad-lanceolate, smooth. Common petiole long. Stipules lanceolate, minute. Flowers subterminating, two or three together, on a very long peduncle. Legume linear, four inches long, subcylindric, slender, smooth. Seeds oblong-ovate, somewhat compressed, with a scar of a different colour. There are several varieties differing in the colour of the flower and seed, all which are much cultivated for food^a.

Native of the East Indies.

35. Stem suffruticose, a foot and half high, erect, branched, hairy. Root an ovate brown tuber. Leaves linear-lanceolate, quite entire, veined, pubescent on both sides, subsessile. Flowers yellow, axillary. Peduncles erect. Stipules in pairs, lateral, subulate, long. Legume hirsute, coriaceous, inflated, two-seeded^b.

Native of India, (and China.) Introduced 1776, by M. Thouin^c.

36. Common by the sea-side in Jamaica. The root is a strong purgative^d.

37. Native of Jamaica.

^x Vahl. ^y Loureiro. ^z Hort. kew. ^a Thunb. and Linn.
^b Thunb. and Loureiro. ^c Loureiro. ^d Ibid.
^e Hort. kew. ^f Browne.

^p Smith spicil. ^q Hort. kew. ^r Thunberg. ^s Hort. kew.
^t Swartz. ^u Loureiro.

38. Root annual. Stem simple, with lines running down from the petiole, villose, rugged, herbaceous, a foot high, the thickness of a quill. Leaves alternate, spreading, four inches long; lateral leaflets opposite, scarcely petioled, the end one more produced and petioled; they are ovate, acute with a minute point, subangular and toothed, nerved, thick, brittle, two inches and a half long. Petioles three-sided, channelled. Stipules linear, very acute, villose, erect, permanent. Spikes axillary, solitary, erect, villose, shorter than the petioles: flowers subsessile, erect, purple. Bracte awl-shaped, erect, under each flower. Filaments all connate, five scarcely shorter than the others, with peltate anthers; on the longer ones ovate, acuminate, two-celled. Legumes acuminate, compressed, silky. Seeds seven or eight, orbicular, subcompressed, brown, separated by transparent membranes.

Native of the East Indies^a.

PROPAGATION AND CULTURE.

Most of the species, coming from the East and West Indies, are tender, and seldom perfect their seeds in England. Being mostly annual plants, they are frequently lost in our stoves, and recovered again as the seeds are sent over. Mr. Miller had probably cultivated most of the above, and perhaps many others not known at present, in the long course of his practice.]

The 12th and 13th are sometimes preserved in botanic gardens, especially the latter, whose pods are closely covered with stinging hairs, commonly known by the title of Cow-itch; but these are too tender to thrive in the open air in this country, so that whoever is desirous to have the plants, should sow their seeds in a hot-bed in march; and when the plants are come up, they should be each planted in a separate pot, and plunged into the hot-bed again, being careful to shade them till they have taken root; after which they must have fresh air every day admitted to them, in proportion to the warmth of the season; and when the plants are too tall to remain in the hot-bed, they should be removed into the bark-stove, where, if they are allowed room to run, they will flower and perfect their seeds.

2. 4. These, with several other species are cultivated in warm countries for the table, but in England these seldom perfect their seeds; and were they to thrive here as well as in the warm countries, they would be little esteemed, because we have much better sorts in our gardens already; for the scarlet flowering Kidney Bean is preferable to all of them for eating, and deserves our care to cultivate it more than any other.

[25. This is easily propagated by seed, and produces abundance of flowers during summer in a stove^b.

38. This also ripens its seed, and may be propagated that way^c. And so doubtless may many of the other sorts, in a good stove.

DOLICHOS TRILOBATUS. See *Glycine triloba*.

DOLIOCARPUS.

Rolander in *act. holm.* 1756. *Lin. gen. Schreb. n.* 874. *Juss.* 433.

Calinea. *Aubl. t.* 221. *Juss.* 434.

Class. 13. 1. Polyandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets oblong-rounded, concave, unequal, coloured, permanent.

COR. Petals three, roundish, concave, plaited.

STAM. Filaments very many, inserted into the receptacle, capillary. Anthers compressed.

PIST. Germ globular. Style long, incurved. Stigma compressed, flat, subbifid.

PER. Berry globular, one-celled, crowned with the style.

SEEDS two, arilled, oblong-rounded, flat on one side, convex on the other.

OBS. Aublet ascribes to his Calinea a one-leaved, three-parted calyx, with two smaller acces-

^a L'Heritier.

^b Smith.

^c L'Heritier.

sary segments, which he calls bractes; it seems however not to be generically distinguished from *Doliocarpus*.

Soramia of Aublet 219. differs in having the segments of the calyx almost equal; five petals; a one-celled berry; and a single seed; but it may be doubted whether these distinctions be sufficient to make it a different genus.

ESSENTIAL CHARACTER.

CAL. five-leaved. COR. three-petalled, plaited. Stigma subbifid. Berry globular, crowned with the style, one-celled, two-seeded.

SPECIES.

1. *Doliocarpus Rolandi*.

Gmel. *Linn. syst.* 2. 805. Roland. in *act. holm.* 1756. p. 261.

Stem stiff and straight, leaves ovate-lanceolate toothed, flowers terminating.

2. *Doliocarpus major*:

Gmel. *Linn. syst.* 2. 805. Roland. in *act. holm.* 1756. p. 261.

Stem scandent, leaves ovate toothed, peduncles lateral one-flowered.

3. *Doliocarpus Calinea*.

Gmel. *Linn. syst.* 2. 805. *Aubl. guian.* 1. 557. t. 221.

Stem scandent, leaves ovate quite entire, flowers axillary in bundles.

DESCRIPTIONS, &c.

1. This grows to a shrub: stem and branches upright: leaves hanging. They are of an oval-lanceolate shape, and dentated.

2. The flowers are aromatic, but rather nauseous; the berries of this plant are pernicious. Stem slender and flexuose; branches at right angles: leaves spreading^a.

3. A shrub, with several knotty spreading twigs, scattering over the neighbouring trees: the branches are garnished with alternate, oval, shining green leaves terminating in a point: the largest are four inches long. The flowers spring from the bosoms of the leaves on the branches, and are arranged alternately in little heaps. The corolla consists of three white petals, which are large and rounded.

Native of Guiana^b.

DOMBEYA. (So named in memory of Jos. Dombey, who travelled into Peru, Chili, &c.)

Class. 22. 13. Dioecia Monadelphia.

Nat. order of *Coniferae*.

Lin. gen. Schreb. n. 1551. *Lamarck. encycl.* 2. 301.

Araucaria. Juss. 413.

GENERIC CHARACTER.

* Male.

CAL. Ament ovate-cylindric, imbricate with very many woody short scales, each terminated by a lanceolate, acute coriaceous leaflet, concave at bottom, narrower and recurved at top.

Perianth none.

COR. none.

STAM. Filaments none, except the amentaceous scales.

Anthers ten or twelve, heaped about each amentaceous scale, linear, grooved, the length of the scale, fastened to the top of it, below the leaflet by the upper extremity, approximating and converging round the scale, separating by the lower extremity when the scale is broken.

* Female.

CAL. Ament large, roundish ovate, closely imbricate with very many germs, resembling scales.

Perianth none.

COR. none.

PIST. Germ each wedge-form-oblong, subcompressed, contracted at the base into a point, with a broad, thick, callous termination. Style none. Stigma bivalve, the valves unequal; the inner very small, obtuse, the outer very large, broad at the base, thick, curved inwards above the inner one, terminated by a linear, acute, slender, ascending strap, almost the length of the germ, bent in at a right angle above the germ.

^a Rolander.

^b Aublet.

PER. none.

SEEDS very many, heaped into a roundish strobile, imbricate; each oblong, subcylindric, towards the base obtusely four-cornered, with a short broad spatulate wing or strap at the top, thickened at the edge, incurved, ascending: the shell coriaceous, coloured, valveless; the kernel oblong, subangular at the base. Receptacle naked, villose, here and there alveolate.

ESSENTIAL CHARACTER.

MALE. Calyx of the ament scales, terminated by a leaflet. Cor. none. Anthers ten or twelve without filaments.

FEM. Cal. Ament with many germs. Cor. none. Stigma bivalve, unequal. Seeds many, in a roundish strobile.

SPECIES.

1. Dombeya Chilensis.

Lamarck. *encycl.* vol. 2. p. 301.

Turbinate imbricate leaves, mucronated on one side: the branches quaternate, and cruciate.

DESCRIPTION.

This is a tree as yet very little known; a native of Chili, of a resinous nature, in some respects allied to Protea; and also to the Pines in some particulars of its fructification. The trunk is straight and of considerable height: the wood white, solid, and clothed with a kind of double bark. The boughs are covered with very numerous leaves, sessile, oval, very pointed, entire, smooth and coriaceous: a little concave inwards, and convex outwards; they have a sharp point, and are ranged on the branches in the manner of scales. The flowers are male and female, borne on different individuals, and hang in sessile solitary catkins from the tops of the branches.

DOMBEYA L'Herit. See *Tourrettia*.

DONATIA. (So named by Forster from Vitaliano Donati of Padua, professor of botany at Turin. He travelled into Egypt and Arabia, and died in his journey.)

Forst. *gen.* 5. *Lin. gen.* Schreb. n. 1716. p. 787. *Juss.* 300.

Class. 3. 3. Triandria Trigynia.

GENERIC CHARACTER.

CAL. Perianth three-leaved: leaflets awl-shaped, short, remote.

COR. Petals nine (eight to ten), linear-oblong, twice as long as the calyx, spreading.

STAM. Filaments three, awl-shaped, the length of the calyx. Anthers subglobular, twin.

PIST. Germ inferior? Styles three, filiform, a little longer than the stamens. Stigmas bluntish.

PER.

SEEDS

ESSENTIAL CHARACTER.

Cal. three-leaved. Pet. nine, twice as long as the calyx, linear-oblong. Anthers subglobular, twin.

SPECIES.

1. Donatia fascicularis.

Forst. *gen.* 10.

DESCRIPTION, &c.

This is a simple undivided plant, a finger's length, with imbricate leaves. It differs from Polycarpon in its habit, and having about nine petals to the corolla.

DONATIA Loebl. See *Avicennia*.

DONAX. See *Arundo*.

DORÆNA.

Lin. gen. Schreb. n. 264. *Thunb. nov. gen.* 3. & *jap.* 6. *Juss.* 420.

Class. 5. 1. Pentandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-cleft, shorter than the corolla: divisions ovate, concave.

COR. one-petalled, subcylindric-wheel-shaped; border five-cleft, segments ovate, obtuse, erect.

STAM. Filaments very short, so as to be scarcely any; inserted into the tube of the corolla. Anthers oblong, subquadrangular, included.

PIST. Germ conic, smooth, superior. Style filiform, the length of the corolla. Stigma truncate, emarginate.

PER. Capsule ovate, acute, one-celled.

SEEDS very many.

ESSENTIAL CHARACTER.

Cor. five-cleft. Stigma emarginate. Caps. one-celled.

SPECIES.

1. Doræna japonica.

Lin. syst. 194. *Thunb. jap.* 84.

DESCRIPTION, &c.

A tree of about a fathom in height. Branches alternate, round, ash-coloured, smooth, divaricate. Leaves alternate, petioled, oblong, acuminate, remotely and obscurely serrate, nerved, smooth, spreading, the length of a finger: petioles semicylindric, grooved on the upper part, smooth, half an inch in length. Flowers in racemes, white, minute. Racemes axillary, scarcely half an inch long. Capsule the size of a pepper-corn.—Native of Japan*.]

DORIA. See *Senecio*, *Solidago*, *Othonna*.

DORONICUM. (Doronigi or Durungi; an Arabic name.)

Lin. gen. n. 959. *Reich.* 1039. *Schreb.* 1297.

Gærtn. t. 173. *Tourn.* 277. *Vaill. A. G.* 1720.

f. 41. 14. *Juss.* 182. *Bellidiastrum.* *Mich.* 29.

Class. 19. 2. Syngenesia Polygamia Superflua.

Nat. order of *Compositæ Discoideæ*.—*Corymbiferae*. *Juss.*

GENERIC CHARACTER.

CAL. Common with leaflets lance-subulate, about twenty in number, equal, upright, of a double series, length generally of the ray of the corolla.

COR. Compound rayed. Corollules hermaphrodite tubular, numerous, in the disk. Females ligulate, of the number of calycular leaves, in the ray.

Proper of the hermaphrodite funnel-form: border five-cleft, patulous.

Female ligulate, lanceolate, three-toothed.

STAM. in the hermaphrodites: Filaments five, capillary, very short. Anther cylindric, tubular.

PIST. in the hermaphrodites: Germ oblong. Style filiform, length of the stamens. Stigma emarginate. In the females: Germ oblong. Style filiform, length of the hermaphrodite. Stigmas two, reflex.

PER. none. Calyx slightly converging.

SEEDS in the hermaphrodite solitary, obovate, furrowed, a little compressed. Down hairy.

In the females solitary, obovate, furrowed, a little compressed. Down none.

REC. naked, flat.

ESSENTIAL CHARACTER.

Cal. scales in two rows equal, longer than the disk.

Seeds of the ray naked and destitute of down.

Down to those of the disk simple. Recept. naked.

SPECIES.

1. Doronicum Pardalianches. Great Leopard's-bane.

Lin. spec. 1247. *syst.* 768. *Reich.* 3. 835. *mat.*

med. 187. *hort. cliff.* 411. *Gærtn. fruct.* 2. 458.

Huds. angl. 650. *With.* 925. *Lightf. scot.* 485.

Hall. belv. n. 88. *Scop. carn. n.* 1085. *Allion.*

pedem. n. 747. *Krock. fles. n.* 1421. *Jacqu.*

austr. 4. t. 350. *Villars dauph.* 3. 205. *Mill.*

fig. t. 128. *Berg. phyt.* 47. *Blackw. t.* 239.

D. maximum. *Ger. emac.* 762. *Raii hist.* 276.—

austriacum. *Park. theat.* 321. 7.—fol. caulem am-

plexantibus. *Baub. pin.* 185. *Camer. epit.* 823.

Mor. hist. f. 7. t. 24. f. 4.

D. 7. austriacum 3. *Clus. hist.* 2. 19.

β. D. radice scorpii. *Baub. pin.* 184. *Mor. f.* 1.

D. latifolium. *Clus. hist.* 2. 16.

D. vulgare. *Park. theat.* 319. f. 1. *Raii hist.* 274.

D. majus offic. *Ger.* 620. f. 1. *emac.* 759. f. 2.

γ. D. austriacum. *Jacqu. austr.* 2. t. 130.

Leaves cordate obtuse toothletted; those next the root petioled, on the stem embracing.

2. Doronicum plantagineum. Plantain-leaved Leop.

Lin. spec. 1247. *Reich.* 3. 836. *hort. cliff.* 411.

Gouan monsp. 446. *Berg. phyt.* 71.

D. minus. *Dalech. hist.* 1202. *Park. theat.* 319. 2.

Ger. 620. f. 2. *emac.* 759. f. 1. *Raii hist.* 277.

* Thunberg.

- D. plantaginis* fol. *Bauh. pin.* 184. *Mor. t.* 24. f. 9.
 β. *D. pl. fol. lusitanicum.* *Tournef. inst.* 488.
Leaves ovate acute somewhat toothed, branches alternate.
 3. *Doronicum Bellidiastrum.* *Daisy-leaved Leop.*
Lin. spec. 1247. *Reich.* 3. 836. *hort. cliff.* 500.
Krock. filif. n. 1422. *Jacq. austr.* 4. t. 400.
Hall. belv. n. 92. (*Arnica*). *Scop. carn. n.* 1074. (Aster).
Bellidiastrum alpinum, &c. *Mich. gen.* 32. t. 29.
Bellis media. *Clus. hist.* 2. 44. *Camer. epit.* 654.—
sylvestris, caule carens. *Bauh. pin.* 261. 6.
 β. *B. caule pedali, &c. fol. latis, fl. rubris & albis.*
Mentz. pug. t. 8.
Stem naked very simple one-flowered.

DESCRIPTIONS, &c.

1. Great Leopard's Bane has thick fleshy roots, divided into many knots, sending out strong fleshy fibres, which penetrate deep into the ground. Root-leaves heart-shaped, hairy, petioled: among these arise the flower-stalks, which are channelled and hairy, near three feet high, putting out one or two smaller stalks from the side; these grow erect, and have one or two heart-shaped leaves closely embracing the stalk; this and each branch is terminated by one large yellow flower. These appear in may; and the seeds ripen in july.

[The scales of the calyx are about twenty-six. The florets of the ray are streaked with green lines, and are from twenty-two or twenty-four to thirty in number; in the disk are about 178. Seeds of the ray nearly triangular, and streaked with ten lines: those of the disk roundish, hairy and crowned with a down which is slightly plumose. Receptacle convex and hairy. From the bursting of the anthers to the ripening of the seeds takes up the space of one month^a. The stem-leaves towards the base become narrower, and then again widen into ears clasping about the stem, so as to be in a manner appendicled. In the great smooth variety, they are obscurely ferrate, three or four inches broad, and near a span in length; whereas in the smaller one they are scarcely half the length and breadth^b.

Native of France, Switzerland, Germany, Austria, Carniola, Hungary, Savoy, where I gathered it on M. Saleva, Piedmont. This is one of the plants which from the facility with which it propagates itself has lately escaped from the gardens to increase the British Flora. Mr. Lightfoot remarked it in Scotland, but always near houses; and Dr. Stokes near Duplin house.

This plant has been stigmatized as poisonous, seemingly without much reason. It had its name *Pardalianches* (παρδαλις, a leopard, and αἶμα, to strangle) from this supposed noxious quality. The famous Conrad Gesner however took two drams of the root without injury. Others on the contrary would persuade us that it is an antidote to poison, but they are still farther from the truth. It is not used in the present practice. Dr. Stokes informs us that two drams occasioned a sense of inflation in the stomach, and of general weakness, but that these symptoms were of short duration. That it has been recommended in vertigo, epilepsy, and menstrual obstructions, but that these powers want the confirmation of a more accurate experiment^c.

As the Austrian plant differs from the common one chiefly in having a more woody root that spreads but little, it is no more than a variety^d.]

2. The leaves of Plaintain-leaved Leopard's Bane are indented on their edges towards their base, but their upper parts are entire. The stalks rise about two feet high; each is terminated by a large yellow flower, like that of the preceding: they have two or three alternate, embracing leaves, not so hairy as those of the former sort. It flowers about the same

time; and grows naturally in Germany, France, Spain, and Portugal.

[These were both cultivated in 1597 by Gerarde.]

3. This has a perennial root, as well as the two preceding. The leaves are like those of the common Daisy, but longer, and not so broad. The flower grows on a naked stalk near a foot long, and the root seldom sends out more than one stalk. The ray of the flower is white, and very like that of Common Daisy; the disk is yellow.

[Root-leaves many, gradually lessening to the petiole, lanceolate or obovate, quite entire or toothed here and there, hirsute, thickish, pale green. Among these arise the scapes, half a foot or a span in height, slender, hirsute, round, purplish, erect, one-flowered. Calyx smoothish, the length of the disk of the flower; leaflets eighteen or twenty. Florets in the ray quite entire or with two teeth, spreading very much. Germ crowned only with a down, not with scales. Down of the seeds sessile, plumose. Receptacle convex.—The seeds of the ray are downy in this^e.

On the Swiss, Tyrolese and Italian alps; in Austria, Carniola, Silesia. I gathered it by the Bois de Batie near Geneva, april 22, 1779, in flower. Haller found it in the lower alps with a deep red flower. Cultivated by Mr. Miller, in 1759^f.] He received it from Verona.

PROPAGATION AND CULTURE.

1. This plant multiplies very fast by its spreading roots, and if the seeds are permitted to scatter, they will produce plants wherever they happen to fall, so that it becomes a weed where it is once established; it loves a moist soil and a shady situation.

2. The second is equally hardy, and multiplies in as great plenty.

3. This is propagated by parting the roots, for the seeds do not ripen well in England. It must have a shady situation and a moist soil. The flowers do not make a much better appearance than those of the common Daisy, only they stand on much taller stalks.

DORONICUM. See *Arnica*, *Rudbeckia*, *Senecio*, *Septas*, and *Tussilago*.

—helveticum. See *Senecio Doronicum*.

DORSTENIA. (So named by Plumier, from Theodorus Dorstenius, a German physician, who published a history of plants, or *Botanicon*, 1540.)

Lin. gen. n. 158. *Reich.* 166. *Schreb.* 209.

Plum. 8. *Houst. A. A.* 421. t. 12. *Juss.* 401.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of Scabridæ.—*Urticæ* Juss.

GENERIC CHARACTER.

CAL. Receptacle common one-leaved, flat, cornered, very large, covered by the receptacle, with very numerous floscules inhabiting the disk, very small.

Perianth proper four-cornered, concave, imbedded in the receptacle and united with it.

COR. none.

STAM. Filaments four, filiform, very short. Anthers roundish.

PIST. Germ roundish. Style simple. Stigma obtuse.

PER. none. Receptacle common becoming fleshy.

SEEDS solitary, roundish, acuminate.

OBS. Those who have opportunity of examining the living plant would do well to observe whether any other female floscules are intermixed with the hermaphrodites, as in *Parietaria*; for *Dorstenia* seems intermediate between *Ficus* and *Parietaria*, and as it were a *Fig* expanded.—Swartz has observed monoecous flowers.

ESSENTIAL CHARACTER.

Recept. common one-leaved, fleshy, in which solitary seeds nestle.

SPECIES.

1. *Dorstenia Houstoni*.

Lin. spec. 176. *Reich.* 1. 341. *Houst. philos. trans.* 421. f. 2. *Plenck, ic. t.* 103.

^c Krock.

^f Haller.

^s Hort. kew.

^a Lightfoot.

^b Krock.

^c Withering's arrangem.

^d Murr in *fig.*

Scapes rooted, leaves heart-shaped angled acute, receptacles quadrangular.

2. *Dorstenia Contrajerva.*

Lin. spec. 176. Reich. 342. mat. med. 53. hort. cliff. 32. Houtt. phil. transf. 421. f. 1. Plum. gen. 29. ic. 119. Blackw. t. 579. Woodv. med. bot. 140. t. 51. Hern. mex. 147. Plenck, ic. t. 67.

Drakena radix. Clus. exot. 83.

Cyperus longus odoratus peruanus. Baub. pin. 14.

Scapes rooted, leaves pinnatifid-palmate serrate, receptacles quadrangular.

3. *Dorstenia Drakena.*

Lin. spec. 127. Reich. 342. Plenck, ic. t. 102.

Scapes rooted, leaves pinnatifid-palmate quite entire, receptacles oval.

[4. *Dorstenia caulescens.*

Lin. spec. 176. Reich. 342. hort. cliff. 32. Plum.

spec. 10. ic. 120. f. 1.

Peduncles on a stem.

5. *Dorstenia lucida.*

Forst. fl. austr. n. 58.

Elatostema pedunculatum. Forst. ch. gen. 106. t. 53. n. 1.

Caulescent, leaves obliquely ovate entire, even, peduncles in cymes axillary.

6. *Dorstenia pubescens.*

Forst. fl. austr. n. 59.

E. sessile. Forst. ch. gen. 106. t. 53. n. 2.

Caulescent, leaves obliquely ovate serrate pubescent, peduncles axillary bearing heads.

7. *Dorstenia cordifolia.*

Swartz prodr. 34. obs. 51. Lamarck encycl. 2. 317. 2.

Scapes rooting, leaves cordate ovate toothletted, receptacles orbiculate.

8. *Dorstenia chinensis.*

Lour. cochinch. 90.

Peduncles cauline, petioles three or five-leaved.]

DESCRIPTIONS, &c.

1. This sort sends out several angular heart-shaped leaves from the root, which have foot-stalks eight or nine inches in length and very slender; the leaves are about three inches and a half long, and almost four broad at their base, the two ears having two or three angles which are acute, and the middle of the leaves are extended and end in acute points like a halbert; these are smooth and of a lucid green; the foot-stalk which sustains the placenta is nine inches long, and about half an inch square, and the upper surface closely set with small flowers.

Native of Campeachy in South America. Found there on rocky grounds by Dr. Houttoun, and cultivated by Mr. Miller before 1733.

2. The second sends out several leaves from the root, which are about four inches long, and as much in breadth; these are deeply lacinated into five or seven obtuse parts, standing upon foot-stalks near four inches long; they are smooth, and of a deep green. The stalk arises from the root, and grows near four inches high, upon which the fleshy placenta is vertically placed; this is of an oval form about one inch long, and three quarters broad. Upon the upper surface of this, the small flowers are closely situated, the fleshy part becoming an involucre to them; these are very small, and scarce conspicuous at a distance, being of an herbaceous colour.

[Native of New Spain, Mexico, Peru, the islands of Tobago and St. Vincent *.] Mr. Miller says that it was discovered by his ingenious friend Dr. William Houttoun, near old Vera Cruz in New Spain.

3. The third sort sends out leaves of different forms; some of the lower leaves are heart-shaped, having a few indentures on their edges, and ending in acute points, but the larger leaves are deeply cut like the fingers on a hand, into six or seven acute segments. These leaves are five inches long, and six broad in the middle; they are of a deep green, and stand upon long foot-stalks. The placenta is very

thick and fleshy, an inch and a half long, and three quarters broad, having four acute corners; these have a number of small flowers, placed on the upper surface like the other species.

Linneus says it is a native of Vera Cruz; but Mr. Miller informs us that it was found in great plenty in the island of Tobago, by Mr. Robert Millar, surgeon. He also affirms, that the roots of all the three species are brought over indifferently, to be used in medicine and in dyeing; and that it was not known what the plant was, the roots of which were imported, and had been long used in medicine, until Dr. Houttoun informed us; for although father Plumier had discovered one species, and had given the name of *Dorstenia* to it, yet he seems not to have known, that the *Contrajerva* was the root of that plant.

[4. This appears to be a small plant, with leaves proceeding irregularly from the stem, which is short; they are ovate-acute and pretty strongly dentated at the edges. The male flowers are collected into little heads, and the females into a kind of sharply lobed or irregular flattish heads. The leaves stand on remarkably long foot-stalks^b.

5, 6. These are natives of the Society Isles. Forster, supposing them to be of a different genus from this, named them *Elatostema*, from *ελατος* elastic, and *στέμα* a flamen; because the stamens are elastic.

7. Receptacle plano-convex, with a crenate dotted margin, and fleshy. Disk a little concave. Male flowers in the disk towards the ray. Calyxes immersed in the receptacle, or four-toothed holes. Filaments two, three, or four short; with twin anthers. Flowers in the middle of the disk female: calyxes immersed, or four-toothed, four-cornered holes. Germ ovate: style bifid: stigmas reflex. When the germ is ripe it is concealed within the receptacle, and opens into two parts, dropping the seed, which is roundish. It is clearly allied to *Urtica* and *Parietaria*.

Native of Jamaica and St. Domingo^c.

8. Root fusiform, three inches long, white within and without, fleshy, aromatic. Stem perennial, sub-erect, round, simple, whitish. Leaves ternate or quinate, lanceolate, quite entire, smooth, on a long common petiole. Receptacle of the flowers lateral, fleshy, suboval, with many florets put forth at the top: the calyx is funnel-form, and three-toothed.

Native of China in the northern provinces; and called there *Pechi* and *Bach-chi*. The root is aromatic, and is used in medicine^d.]

PROPAGATION AND CULTURE.

It will be difficult to obtain these plants, because the seeds are seldom to be found good; nor will they grow, if they are kept long out of the ground; so that the only sure method to obtain them is, to have the roots taken up at the time when their leaves begin to decay, and planted pretty close in boxes of earth, which may be brought very safe to England, provided they are preserved from salt water, and are not over-watered with fresh water in their passage. When the plants arrive, they should be transplanted each into a separate pot filled with fresh earth, and plunged into the bark-stove, which should be kept of a moderate heat; and the plants must be frequently refreshed with water during the summer season; but in winter, when the leaves are decayed, it should be given to them more sparingly. With this management these plants may not only be maintained, but may also be increased by parting their roots in the spring, before the plants put out their leaves.

[DORTMANNA. See *Lobelia*.]

DORYCNIUM. See [*Anthyllis*, *Aspalathus*, *Convolvulus*, *Coronilla*,] *Lotus*, *Pforalea*.

DOVE'S-FOOT Crane's-bill. See *Geranium*.

[DOUGLASSIA. (So named in honour of James Douglas, M. D.)

Lin. gen. Schreb. n. 1761. p. 809. Aiouea. Aubl. t. 120. Juss. 80.

Class. 18. 4. Polyadelphia Polyandria.

* Linn.

^b Plumier.

^c Swartz.

^d Loureiro.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, turbinate, half-six-cleft, permanent: *segments* ovate, acute, coloured.

COR. none.

Nectaries fix, ovate on the outside with two oblong pits, on the inside convex, anther-bearing; terminated by two glands, convex without, concave within; ending at bottom in a capillary pedicel, shorter than the calyx, inserted at the base of the segments, with a villose gland on each side at the insertion of it.

STAM. *Filaments* none. *Anthers* very many, minute, one-celled, with the valve opening at the base.

PIST. *Germ* ovate, superior. *Style* filiform, the length of the stamens. *Stigma* six-cleft.

PER. *Berry* ovate, acute, one-celled.

SEED single, with a brittle shell.

OBS. *It is allied to Porostema. The fructification is extremely singular. The fruit aromatic.*

ESSENTIAL CHARACTER.

CAL. half-six-cleft. COR. none. NECT. fix. FILAMENTS none. GERM superior. STIGMA six-cleft. BERRY ovate, one-celled. SEED one, with a brittle shell.

SPECIES.

1. *Douglassia Guianensis. Guiana Douglassia.*
With alternate, lanceolate leaves.

DESCRIPTION, &c.

1. This, the only species, is a middling sized shrub, growing in Guiana; it is about five feet high, and branching at top: its diameter five or six inches: the wood white and compact. The branches are subdivided into smaller ones; the flowers grow at their extremities in a kind of straggling clusters, and are small and yellowish.

DOUGLASSIA Houst. See *Volkameria*.

DRABA. (From *δραβη*, acrid, Lin. *It is a name of Dioscorides.*)

Engl. *Whitlow-grafs.* Fr. *Drave.*

Lin. gen. n. 800. Reich. 864. Schreb. 1076.

Gertn. t. 141. Dill. gen. 122. Juss. 240.

Class. 15. 1. *Tetradynamia Siliculosa.*

Nat. order of *Siliquosæ* or *Cruciformes. Cruciferae* Juss.

GENERIC CHARACTER.

CAL. *Perianth* four-leaved; *leaflets* ovate, concave, from erect spreading; deciduous.

COR. four-petalled, cruciform. *Petals* oblong, somewhat spreading; with very small claws.

STAM. *Filaments* fix, length of the calyx: of these the four opposite ones somewhat longer, from erect spreading. *Anthers* simple.

PIST. *Germ* ovate. *Style* scarce any. *Stigma* headed, flat.

PER. *Silicle* elliptic-oblong, compressed, entire, destitute of style, two-celled; *dissepiment* parallel with the valves. *Valves* plano-concave.

SEEDS several, small, roundish.

OBS. *In some species the petals are two-parted to the very claws, in others only emarginate at the tip, in others perfectly entire.*

The essential character consists in the silicle, which is of an oval-oblong compressed form, almost destitute of style: hence it is easily distinguished from Alyssum, Subularia, and Lunaria.

ESSENTIAL CHARACTER.

Silicle entire, oval-oblong; valves flattish, parallel to the dissepiment. *Style* none.

SPECIES.

1. *Draba aizoides. Hairy-leaved Alpine Whitlow-grafs.*
Lin. syst. 585. Reich. 3. 212. mant. 91. Gouan illustr. 39. Jacqu. austr. 2. 55. t. 192. Hall. belv. n. 498. Villars dauph. 3. 280. Krock. files. n. 1013. Curt. mag. 170.
D. alpina. Jacqu. vind. 254. Scop. carn. n. 786. Crantz. austr. 14. crucif. 95. n. 2. Mill. dict. n. 1. Raii hist. 789. n. 3. (Paronychia).
Alyssum alpinum hirsutum luteum. Mill. dict. edit. 1. fol. n. 3. fig. t. 20. f. 2. Baub. pin. 284. n. 11. (Sedum).

Leucoium luteum aizoides montanum. Col. ecphr. 2. 62.

Scape naked simple, *leaves* ensiform keeled ciliate.

- [2. *Draba ciliaris.*

Lin. syst. 585. Reich. 213. mant. 91. Ger. prov. 344. n. 2. t. 13. f. 1.

Stem almost naked, *leaves* linear ciliate about the edge and along the keel, *petals* entire.

3. *Draba alpina.*

Lin. spec. 896. syst. 585. Reich. 213. fl. lapp. n. 255. suec. n. 570. hort. cliff. 333. Fl. dan. t. 56. Gouan. illust. 39. not.

Scape naked simple, *leaves* lanceolate quite entire; *petals* emarginate.]

4. *Draba verna. Common or Spring Whitlow-grafs.*

Lin. spec. 896. Reich. 213. hort. cliff. 333. fl. suec. n. 567. Gertn. fruct. 2. 284. Hudf. angl. 278. With. 668. Curt. lond. 1. 49. abr. t. 9. Lightf. scot. 337. Relb. cant. n. 470. Hall. belv. n. 496. Scop. carn. n. 792. Neck. gallob. 273. Gunn. norv. n. 2. Pollich. pal. n. 604. Krock. files. n. 1014. vol. 2. t. 28. Berg. phyt. t. 13. Villars dauph. 3. 281.

Bursa pastoris minor loculo oblongo. Baub. pin. 108.

Mor. f. 3. t. 20. f. 6. Baub. hist. 2. 937. 2.

Alysson vulgare, polygoni fol. caule nudo. Segu. veron. 1. 575. t. 4. f. 3.

Alfina minima. Tabern. 708.

Pilosella minor. Thal. harc. 84. t. 7. f. E.

Paronychia vulgaris. Dod. pempt. 112. Ger. 499.

1, 2. emac. 624. i. Raii hist. 789. syn. 292. — *alfines* fol. Park. theat. 556. f. 3. Pet. brit. t. 48. f. 6, 7. Lob. ic. 1. 469. 1.

Scapes naked, *leaves* somewhat serrate, often very entire, *petals* divided.

5. *Draba pyrenaica.*

Lin. spec. 896. syst. 585. Reich. 214. Scop. carn. n. 790. Crantz. austr. 13. t. 1. f. 5. crucif. 95. t. 1. f. 5. (D. rubra). Ger. prov. 344. n. 4. Jacqu. vind. 255. austr. 5. t. 228. Allion. pedem. n. 894. t. 8. f. 1. Villars dauph. 3. 282. Fl. dan. t. 143.

Alyssum pyrenaicum. Tournef. inst. 217.

Scape naked, *leaves* wedge-shaped palmate three-lobed.

6. *Draba muralis. Wall Whitlow-grafs.*

Lin. spec. 897. syst. 585. Reich. 214. fl. suec. n. 569. mant. 424. Hudf. angl. 278. Crantz. crucif. 95. n. 4. With. 669. Hall. belv. n. 499. Neck. gallob. 273. Pollich. pal. n. 605. Krock. files. n. 1015. Villars dauph. 3. 283. Ger. prov. 345. n. 5. Thunb. jap. 259. Barrel. ic. 816. (Myagroides).

Bursa pastoris major loculo oblongo. Baub. pin.

108. prodr. t. 50. Raii hist. 790. syn. 292. Pet. brit. 48. 5. Mor. f. 3. t. 20. f. 5. — sublongo loculo. Baub. hist. 2. 938. f. 939. 1.

Thlaspi veronicae fol. Park. theat. 843. 13.

Alysson veron. fol. Tournef. inst. 217. Garid. aix. 27.

- β. *Draba nemorosa. Lin. spec. ed.* 1. 643. Allion. pedem. n. 897.

D. minima muralis discoides. Col. ecphr. 1. 274. t. 272.

Stem branched, *leaves* ovate, sessile, toothed.

- [7. *Draba hirta.*

Lin. spec. 897. Reich. 215. Hall. belv. n. 497. Allion. pedem. n. 896. Fl. dan. t. 142. Villars dauph. 3. 282. Krock. files. n. 1016. Ger. prov. 345. n. 6. Gunn. norv. n. 697.

D. stellata. Jacqu. vind. 256. t. 4. f. 3. obs. 1. 48. aust. 5. t. 432.

D. austriaca. Crantz. austr. 12. t. 1. f. 4. — hirsuta. crucif. 95. n. 5. t. 1. f. 4.

Bursa pastoris alpina hirsuta. Baub. pin. 108. prodr. t. 51.

Alysson alpinum polygoni folio incano. Tournef. inst. 217.

β. *D. norvegica. Fl. dan. t.* 143. Gunn. norv. n. 846.

Scape one-leafed, *leaves* subhirsute, *silicles* oblique pedicelled.

8. *Draba fladnizensis*.

Lin. syst. 585. *Jacqu. misc.* 1. 147. t. 17. f. 1.
Scape two-leaved, leaves smooth ciliate, silicles straight pedicelled.

9. *Draba incana*. Hoary Whitlow-grass.

Lin. spec. 897. *Reichb.* 215. *fl. lapp.* n. 254.
succ. n. 568. *hort. cliff.* 334. *Huds. angl.* 279.
Willb. 669. *Lightf. scot.* 338. *Gunn. norv.* n. 3.
Fl. dan. t. 130.

Leucoium f. *Lunaria vasculo oblongo intorto*. *Pluk.*
alm. t. 42. f. 1.

Lun. contorta major. *Petiv. brit.* t. 48. f. 3. *Raii*
syn. 291.

β. *Paronychia similis sed major, perennis alpina*
repens. *Raii syn.* 292. *Petiv. f.* 4.

Stem-leaves numerous hoary, silicles oblong oblique sub-
sessile.

DESCRIPTIONS, &c.

1. [It very much resembles *D. alpina*, from which however it differs, in the leaves being even, linear, keeled, ciliate; not oval-oblong, rough-haired, without any keel. It differs from *D. ciliaris* in having the root-leaves forming a close tuft, giving it the air of a *Sedum*; the keel even; not alternate leaves on the branches spreading, and a ciliate keel. The flowers also are yellow, as in *D. alpina*, not white^a.

Root perennial. Stem three inches high. Petals entire. Silicle hairy, rough, ovate, sharp at both ends, ending in a long style^b; four lines in length; the cells having six to eight seeds, which are round and flattened^c.

The leaves are extremely smooth, shining green, set round with stiff hairs regularly disposed, some only two lines long and half a line broad; others an inch long and a line broad. Scape even, one and two inches high, or more. Flowers in a sort of corymb, which becomes a raceme when the fruit is ripe. Calyx smooth; leaflets fleshy, green, commonly coloured on the edge, which is membranaceous. Petals yellow, usually entire. Silicle a line and half wide, five lines long with the point, green, sometimes pubescent with hairs pressed close, but more frequently smooth or netted-veined^d.

It is well adapted to rockwork, and is a pretty plant with a pleasant smell.

Native of the mountains of France, Switzerland, Savoy, Austria, Carniola, Silesia, &c. I gathered it on M. Saleve near Geneva, April 13, 1779; where Ray also mentions that it grows. In our gardens it flowers so early as February.—Cultivated in 1731, by Mr. Miller^e.

2. Root perennial. Root-leaves forming a close tuft, imbricate, crowded, even, keeled, distinctly ciliate. Petals obovate, white. Style longer than the stamens. It differs from the foregoing, in the leaves being narrower and smooth, and the petals not in the least emarginate. In a state of cultivation it branches out with remote leaves^f.

Gerard (in fl. Gallo-Provinc.) thus describes it. Stem flaccid, slender, diffused, diaphanous, half a palm in height, branched at bottom, naked at top. Leaves elegantly ciliate, forming roses next the ground, and gradually becoming more remote higher up, sessile, keeled beneath, ending in a sharpish point. Peduncle naked, the length of the stem, filiform, few-flowered. Flowers terminating, subsessile: leaflets of the calyx erect, almost equal, lanceolate, obtuse, green on the outside, yellowish on the inside. Petals obovate, twice as long as the calyx, with claws the length of the calyx. Filaments erect, bristle-shaped, almost equal, the length of the petals: anthers oblong, pale. Germ ovate: style longer than the stamens.

Native of Provence, in dry rocky places.

3. Perennial. All the root-leaves spreading, sprinkled with hairs on the upper surface, disposed as in *Androsace*; by no means imbricate, linear, ciliate, or smooth on the upper surface. Stem leaf-

less, with a few hairs scattered about it; not one-leaved or smooth. Petals slightly emarginate, not entire^g.

Gouan thus distinguishes this from the first sort. It has fewer leaves, ovate, a little longer, very often toothed towards the end, and rough with hairs. Stem often naked, but sometimes it has a leaf or two on it; this also is rough with hairs. Flowers subracemed, at first corymbed. Calyx hairy; the leaflets membranaceous and coloured at the edge, as in *D. aizoides*. Petals a little emarginate. The leaves are represented quite entire in Oeder's figure, which is otherwise a good one.

Native of the Alps of Europe.

4. Root annual. Stems about three inches high, one to five, or more from the same root in a rich soil; smooth after flowering, but hairy when young. Leaves ovate-lanceolate, narrower at the base; some entire, others subserrate, spreading on the ground, somewhat scabrous, hirsute, some of the hairs bifurcate, others trifurcate. Peduncles alternate, bearing one flower only. Leaflets of the calyx obtuse and somewhat hairy. Corolla petals white, twice the length of the calyx, two-parted. Filaments bending forward; the four longer ones the height of the pistil. It is difficult to find the full complement of stamens when the flower is fully expanded, as they drop when the germ begins to enlarge. Silicle terminated by a short blunt point. Seeds ovate, brown, fixed to the edge of the partition^h: from three to six in a cell, according to Scopoli, but sometimes as many as twenty-fourⁱ. By these it propagates itself prodigiously, and is a weed hardly to be eradicated in dry pastures, gravel-walks of gardens, &c.

Linneus observes that the flowers hang down in the night and in wet weather: that in Smoland they sow Rie when this plant is in blossom; and that in dry soils whole fields are covered with the flowers early in the spring. With us it is common on walls, dry banks, fields, and pastures, flowering in March and April, or earlier if the weather be mild.—In some countries abundance of this little plant is supposed to prognosticate dearth of corn; which may have some foundation, as a wet season produces a great crop of this little weed, which according to some is agreeable to sheep^k.

Gerarde calls it Whiteblowe, or Whitlowe-grasse, or Naile woort.

This small plant may serve as an index of the difference of climates; for in Sweden it flowers in the month of April; in Germany a month earlier; in England, Holland, and France in February; whilst in Sicily it flowers all the winter.]

5. This is a perennial plant, seldom more than two inches high; it has a shrubby stalk, dividing into many small heads. Leaves small; the lower ones have five short narrow lobes, the upper have but three. The flowers come out in clusters, sitting close to the leaves: they are of a bright purple colour, and appear early in the spring.

[Root creeping, putting out erect branching shoots, which at the end bear thick shining stiffish spreading leaves, half-three-lobed, narrowed at the base into a sort of half-embracing erect petiole, marked with three lines; the lobes spreading oblong sharpish, ciliate at the tip and interruptedly on the edge. Scape round erect scarce half an inch high, from the centre of the branchlet, five-flowered; and from the same point, at the sides of it, spring two other branchlets destined to bear flowers the following year. The proper peduncles higher than the scape form a corymb. Calyx greenish purple. Petals roundish, large, flat, spreading much, quite entire, veined, purple, on short claws. Filaments purple. There is a roundish, large, bifid gland on each side within the shorter stamens. Style almost the length of the germ. Silicle obovate, compressed at top and bottom different ways. Seeds two^l.

Native of the mountains of Switzerland, in the

^a Linn. mant.

^b Haller.

^c Scopoli.

^d Gouan.

^e Hort. kew.

^f Linn. mant.

^g Linn. syst.

^h Curtis and Withering.

ⁱ Gärtner.

^k Krockner.

^l Jacqu. vind.

Canton of Appenzel, Provence, Carniola, Austria, and Piedmont: flowering in may.

6. Root annual. Root-leaves entire at the base, toothed upwards. Leaves and stem hairy. Stem-leaves rather heart-shaped. Fruit-bearing peduncles horizontal, longer than the filicles. Corollas pale yellow or white, with the petals slightly emarginate. Silicles exactly elliptic, ending in a short blunt knob. Seeds reddish brown^m.]

It rises with an upright branching stalk about ten inches high. Leaves heart-shaped, indented, embracing. The stalks are terminated by loose spikes of white flowers, which appear the beginning of may.

[Native of Sweden, Switzerland, Germany, South of France, Italy, in fissures of rocks. Mr. Ray found it near Montpellier, and between Lucca and Pisa, in hedges. With us, in Derbyshire, Yorkshire, and Westmoreland. Common about Malham.

β. The wood variety being sowed with the *muralis* in a garden, they became so alike as not to be distinguished by any means, the yellow flowers becoming whiteⁿ.

7. Resembles *D. incana* very much, but the stem is naked with a single lanceolate leaf in the middle of it. Petals white emarginate. Silicles more smooth and ovate; with the peduncles only half their length; but subsessile^o.

Perennial. Root-leaves elliptic, smooth, ciliate, tongue-shaped: stem-leaves sessile ovate-acuminate, having only two teeth. Silicles smooth, like those of *D. verna*. It varies in the leaves, which are sometimes smooth and ciliate only about the edge, or hairy all over and hoary; sometimes toothed, at others quite entire^p.

It differs from *D. nemorosa* (n. 6. β.) in having a perennial root, entire leaves, and white flowers^q.

It has very much the air of *D. verna*; the leaves shorter, covered with a short down, and scarcely toothed. Oftentimes, but not always, there is one leaf on the stem, and sometimes two. Scapes flexuose, three inches high and more. Peduncles shorter than in the common sort. Calyx subhirsute, brownish. Petals entire. Silicles narrower than in *D. verna*, otherwise like them, terminated by the short style with a headed stigma. Seeds ovate, acuminate^r.

Native of Lapland, Denmark, Provence, Switzerland, Silesia, Austria, Piedmont, in the fissures of rocks: flowering in may. Mr. Dickson has found the *Draba stellata* or *hirta* of Jacquin in Scotland, on Ben Lawers.

Jacquin, in his *Observationes*, says that his *stellata* is the *hirta* of Linneus, but that in the Austrian plants the filicles are usually straight, very seldom oblique. Though he gave up his *stellata* as a species, yet it seems to be different from Linneus's *hirta*^s. He thus describes it.—This little plant has the habit and size of *D. pyrenaica*. Leaves obversely lanceolate, blunt, attenuated at the base into a sort of petiole half embracing the stalk; they are thick, either quite entire, or with a single tooth on each side, seldom more, ciliate and having on both sides white hairs radiating like a star at top, more than in *Leontodon hispidum*. Scape round, erect, with similar hairs at bottom, but more thinly disposed, at top more naked, there is a single sessile subovate toothed leaf on it, sometimes two, and sometimes so low as to be lost among the root-leaves. Corymb terminating, made up of about seven longish peduncles, the lower ones not reaching above the scape. Calyx yellowish. Petals milk-white, roundish-obovate, entire, flat, very wide and spreading, twice as long as the calyx, on a very short claw. Stamens whitish, the length of the calyx. Gland within each shorter filament. Style short. Silicle oblong^t.

8. Root fusiform, perennial. Root-leaves forming roses, lanceolate, bluntish, quite entire, flat, shining, smooth, firm, ciliate with distant hairs.

Stems from the centre of the roses, erect, undivided, slender, an inch high, naked; they have one or two sessile, lanceolate, smooth, entire leaves on them, villose-ciliate on the edge. Raceme terminating, few-flowered. Flowers from five to eight, pedicelled. Calycine leaflets naked, half the length of the petals, green. Petals snowy-white, slightly emarginate. Filaments awl-shaped, white, with ovate, yellow anthers. Silicle naked. It has no scent.

Native of Carinthia^u.

9. Root biennial. Root-leaves very numerous, spreading like the flower of a rose, lanceolate, tomentose and somewhat hairy, entire, acute. Stem a hand in height, straight and stiff, hoary, clothed with many leaves (frequently more than thirty), very like the root-leaves, but shorter, so that the uppermost are ovate, sessile, and have a few teeth; on the lower part of the stem they are more crowded. Flowers in a small terminating corymb: petals white, obscurely emarginate. Silicles in a raceme, erect, ovate-oblong, oblique, twisted in a direction contrary to the sun's diurnal motion, compressed, naked; peduncles hoary, three times shorter than the filicles, stiff, approaching to the stem. It flowers with the *Anemone*^x.

Stems from five or six to nine inches in height, slightly tomentose, simple most commonly, but frequently branched, crooked.]

Mr. Miller says, that the upper part of the stalk puts out two or three short branches, which are almost naked of leaves, as is also the upper part of the stalk.

[Leaves oval-lanceolate, a little hairy, the lower slightly the upper deeply toothed. Peduncles nearly as long as the filicles, which are lanceolate, smooth, twisted, terminated by the blunt stigma^y.

Native of Lapland, Sweden, Denmark, Norway, Britain, as in Westmoreland, Yorkshire about Settle, and near the summit of Ingleborough; Scotland, as in Isla, Skye, &c. Wales in Caernarvonshire. It flowers in may and june.]

PROPAGATION AND CULTURE.

1, 2, 3, 5. These plants are easily propagated by parting the heads in autumn; for they shoot up to flower very early in the spring. They will thrive and flower annually, in a moist soil, and shady situation; and require no other culture but to be kept clean from weeds.

With respect to the rest, if the seeds are sown in autumn in a shady border, the plants will come up in the spring; or where the seeds are permitted to scatter, the plants will rise without any trouble.

[Some of the species are proper to adorn rock-work, and they all prosper best in that situation.

DRABA. See *Arabis*, *Cochlearia*, *Iberis*, *Lepidium*, *Lobelia*, *Sisymbrium*.

DRACÆNA. (*Δρακίνα*, the female of *δρακων*, a dragon.)

Lin. gen. Reich. n. 458. Schreb. 574. Auth. Vandellio. Gartn. 16. Juss. 40. Oederia and Stoerckia. Crantz. Dianella. Lamarck and Juss. 41.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Sarmentaceæ*.—*Asparagi* Juss.

GENERIC CHARACTER.

CAL. none.

COR. Petals six, oblong, somewhat upright, equal, cohering by the claws.

STAM. Filaments six, inserted into the claws, subulate, thicker in the middle, membranaceous at the base, length scarcely of the corolla. Anthers oblong, incumbent.

PIST. Germ ovate, six-furrowed. Style filiform, length of the stamens. Stigma three-cleft, obtuse.

PER. Berry ovate, six-furrowed, three-celled.

SEEDS solitary, ovate-oblong, incurved at the tip.

OBS. The character is almost that of *Asparagus*, the habit different.

^m Linn. With. Stokes, Woodw. Mfs.

ⁿ Linn. spec.

^p Allioni.

^q Ger. prov.

^r Linn. succ.

^s Haller.

^t Dickson in Linn. trans. 2. 288.

^u Enum. vind. obs. p. 256.

^x Jacq. misc.

^y Linn. spec.

^z Woodw. Mfs.

ESSENTIAL CHARACTER.

Cor. six-parted, erect. *Filaments* somewhat thicker in the middle. *Berry* three-celled, one-seeded.

SPECIES.

1. *Dracæna Draco*. *Dragon Tree*.
Lin. syst. 333. *Reich.* 2. 71. *Plenck, ic. t.* 268.
Asparagus Draco. *Lin. spec.* 451. *Vandell. monogr.*
Palma Draco. *Mill. dict. n.* 11.
[Draco arbor. Baub. pin. 505. *Clus. hist. 1. 1.*
Blackw. t. 358. *Park. theat.* 1531. *Ger.* 1339.
emac. 1523. *Raii hist.* 1598.
Arboreous: leaves somewhat fleshy with a thorny end.
2. *Dracæna ferrea*. *Purple Dracæna*.
Lin. syst. 334. *Reich.* 2. 72. *Qstb. it.* 251. *engl.*
edit. 2. 14. *Lour. cochinch.* 196. *Rumph.*
amb. 4. 79. *t.* 34. *f.* 2. (*Terminalis rubra*).
Arboreous: leaves lanceolate acute.
3. *Dracæna striata*.
Lin. syst. 334. *suppl.* 204.
Frutescent; caulescent, erect; leaves lanceolate obliquely
sickle-form striated; stem flexuose.
4. *Dracæna terminalis*.
Lin. syst. 334. *Reich.* 72.
Asparagus terminalis. *Lin. spec.* 450.
Terminalis. *Rumph. amb.* 4. 79. *t.* 34.
Herbaceous, caulescent; leaves lanceolate.
5. *Dracæna ensifolia*. *Sword-leaved Dracæna*.
Lin. syst. 334. *Reich.* 72. *mant.* 63. *Gærtn. fruct.*
57. t. 16. *Lour. cochinch.* 197.
Dianella nemorosa. *Lamarck encycl.* 2. 276.
Gladiolus odoratus indicus. *Rumph. amb.* 5. 185.
t. 73.]
G. indicus. *Mill. dict. n.* 4.
[Herbaceous, subcaulescent, leaves ensiform.
6. *Dracæna undulata*.
Lin. syst. 334. *suppl.* 203.
Herbaceous, caulescent, erect; leaves ovate acute,
many-nerved; flowers axillary, peduncled.
7. *Dracæna Medeoloides*.
Lin. syst. 334. *suppl.* 203.
Herbaceous, twining; leaves ovate, nerved.
8. *Dracæna erecta*.
Lin. syst. 334. *suppl.* 204.
Herbaceous, caulescent, erect; leaves lanceolate, su-
bulate, sessile.
9. *Dracæna volubilis*.
Lin. syst. 334. *suppl.* 204.
Herbaceous, twining; leaves lanceolate.
10. *Dracæna graminifolia*.
Lin. syst. 334. *Reich.* 72.
Asparagus graminifolius. *Lin. spec.* 450.
Herbaceous, stemless; leaves linear.
11. *Dracæna marginata*. *Aloe-leaved Dracæna*.
Ait. hort. kew. 1. 454.
Aloe purpurea. *Lamarck encycl.* 1. 85.
Shrubby; leaves tooth-spiny; racemes axillary, berries
many-seeded.
12. *Dracæna borealis*. *Oval-leaved Dracæna*.
Ait. hort. kew. 1. 454. *t.* 6.
Herbaceous, subcaulescent; leaves elliptic.
13. *Dracæna indivisa*.
Forst. escul. n. 33. *fl. austr. n.* 150.
Arboreous; leaves ensiform, acute, raceme (*lateral?*)
compound.
14. *Dracæna australis*.
Forst. fl. austr. n. 151.
Arboreous; leaves ensiform, acute; raceme terminating,
erect, superdecompound.

DESCRIPTIONS, &c.

1. This rises with a thick trunk nearly equal in size the whole length; the inner part very pithy, next to this a circle of strong fibres, and the outside soft; height twelve or fourteen feet, nearly of the same diameter the whole length, which is rarely more than eight or ten inches; circular marks or rings are left the whole length, where the leaves have fallen off. The top sustains a large head of these, coming out singly all round it; they are shaped like those of the common Iris, but are much longer, being often four or five feet in length, and an inch and half broad at their base, where they embrace the trunk; they lessen gradually and terminate

in a point: these leaves are pliable, and hang down; they are entire, of a deep green, smooth on both surfaces. It has the habit of the Palms.

[The peduncles are furnished with a joint.—Crantz has made two genera out of this species, under the names of *Oedera* and *Störckia*.^a

Native of the East Indies.]

Mr. Miller received a plant of it from the Cape Verd islands, and seeds from Madeira.

It is called Dragon-tree, because the inspissated juice becomes a red powder very like the eastern Dragon's blood.

[Cultivated in 1640, by Parkinson^b; who sowed the seeds, but they did not abide the winter.

2. Stem shrubby, almost simple, eight feet high, erect, round, with close protuberant rings from the fallen leaves; these are quite entire, a foot and half in length, erect, smooth, on stem-clasping petioles, and of a dusky-red colour. Flowers red-purple, subterminating: spadix diffused; spathe long, awl-shaped, permanent: proper perianth trifold, cup-shaped, small, permanent. Corolla bell-shaped, six-parted, inferior; segments oblong, obtuse, spreading. Anthers sagittate, sharp and bifid at the end. Style awl-shaped, thick, trifold, equal to the stamens: stigmas simple. Berry red. The seed is usually abortive. It seems to approach the Palms^c.

In Chinese it is called *Tat-sio* or *Tsict-tsao*; and is planted in gardens both there and in Cochin-China.

Native of China. Introduced 1771, by Benjamin Torin, Esq. It flowers in march and april^d.

3. Found at the Cape of Good Hope, by Thunberg^e.

4. Leaves almost like those of *Canna*. Raceme terminating, composed of a few branched racemes. Pedicels alternate, solitary, shorter than the flower, surrounded at the base by an obtuse glume. It is a hard tree.

Native of the East Indies^f, and the Society isles^g.

5. Leaves ensiform-lanceolate, nerveless, keeled underneath, petioled. Scape or stem branching, panicled, with two coloured leaflets at the origin of the branches^h.

Root perennial, horizontal, creeping, somewhat woody, odoriferous, simple. Root-leaves heaped, thick, striated, shining, reflex, a foot long. Scape three feet high, leafy at bottom, naked at top, round, slender, declining; flowers terminating, subumbelled. Corolla bell-shaped, spreading; petals lanceolate, blue on the outside, white within, small. Filaments spreading, dilated at the base. Berry roundish, blue, three-grooved, containing many minute seedsⁱ.

Gærtner describes the fruit as a superior subglo-bular berry, of a violet purple colour, fleshy, but when ripe drying up to a thin, obovate crust, marked with three grooves, gibbous at the seeds, having three cells but no valves; partitions membranaceous drawn from the grooves to the axis. Seeds rounded kidney-form, or beaked at the navel, compressed like a lens with a conical boss in the middle on both sides, very smooth, shining and black; two in each cell; fixed to the inner angle. Embryo monocotyledonous, roundish, slender, placed near the navel. This species perhaps more properly belongs to the genus *Medeola*, for it differs remarkably from *D. Draco* in the fruit. The synonym of Rumphius is doubtful, for he attributes nine seeds to his *Gladiolus*.—Cultivated 1759, by Mr. Miller^k.

Native of the East Indies, and Cochin-China.—Loureiro says, that if he had followed his own opinion, he should rather have referred this plant to the genus *Ornithogalum*.

6, 7, 8, 9. Found at the Cape of Good Hope by Thunberg^l.—*Dracæna Medeoloides* and *Medeola asparagoides* are probably one and the same plant^m.

10. Stature of *Anthericum Phalangium*. Leaves like those of grass, very much streaked, a span in

^a Linn. syst.

^b Hort. kew.

^c Loureiro.

^d Hort. kew.

^e Linn. suppl.

^f Linn. spec.

^g Forster.

^h Linn. mant.

ⁱ Loureiro.

^k Hort. kew.

^l Linn. suppl.

^m Retz. 5. p. 3.

length,

length. Scape scarcely longer than the leaves. Four or five flowers at each tooth of the raceme, on pedicels shorter than the flower itself, coming out from a kind of obscure glume.

Native of Asiaⁿ.

11. Native of the island of Bourbon. Introduced 1776, by Monf. Richard. It flowers in april^o.

12. Native of Newfoundland, Hudson's Bay, and Canada. Introduced 1778, by Dan. Charles Sotlander, L. L. D. It flowers in june^p.

13. Native of New Zealand, in woods on the coast of Dusky Bay.

Trunk round, full of small chinks, undivided, leafy at top, from six to nine feet high. Leaves half-stem-clasping, imbricate at the base, quite entire, spreading, striated, bright green, two feet long and a hand broad. Raceme apparently lateral, but perhaps this was owing to the next set of leaves destined for the ensuing year coming out; it is ovate, nodding, with the partial racemes digested into a cylindric thyrsoid form. Universal peduncle two or three feet long, round, even, herbaceous, an inch and half in diameter: partial peduncles a span long, approximating, from erect spreading, round, even, having a lanceolate leaf at the base, the length of the peduncle; they come out scatteringly on every side from the universal peduncle. Pedicels one-flowered, very short, horizontal. Bractes at the base of the pedicel two, very small, lanceolate, acute, concave. Petals subreflex. Germ superior. Style short. Berry globular, blue, marked above with three hollow dots, mucronate with the permanent style, having about seven seeds in each cell, involved in an aril or membrane, so as to appear only one; they are black, smooth, semilunar and three-sided. The generic character constructed from the first species does not agree very well with this or *D. terminalis*, which have many seeds in their berries. Perhaps the berry of the first also may be involved in an aril, and this may constitute the essential difference between *Asparagus* and *Dracæna*.

The berries of this species are eaten by the natives, they are ripe in may, that is at the beginning of their winter. The young leaves, or rather the hybernacle concealed among them, is an excellent salad; and this, together with *Areca oleracea* and *sapida*, *Apium graveolens* or *Smallage*, *Tetragonia halimifolia*, *Lepidium oleraceum* and *piscidium*, and *Sonchus oleraceus* or *Sowthistle*, was found to be of great service to our circumnavigators in resisting the putrid scurvy.

14. Native of New Zealand^q.

PROPAGATION AND CULTURE.

See PALMS.

DRACO ARBOR. See *Dracæna* and *Pterocarpus*.

DRACOCEPHALOS. See *Chelone*.]

DRACO HERBA. See *Artemisia*.

DRACOCEPHALUM. (From *δρακων*, a dragon, and *κεφαλη*, a head; the form of the flowers being ringent, or like a gaping mouth.)

Lin. gen. n. 729. Reich. 787. Schreb. 984.

Gært. 66. Juss. 116. Tourn. 83. Hire. A. G.

1712. 11. Moldavica. Tourn. 85. Ruyschiana.

Mill. dict.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Verticillatæ*.—*Scrophulariæ*. Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, permanent, very short.

COR. one-petalled, ringent. Tube length of the calyx. Throat very large, oblong, inflated, gaping, a little compressed on the back. Lip superior straight, arched, complicated, obtuse. Lip inferior three-cleft; lateral divisions upright, as it were the segments of the throat; the intermediate one hanging down, small, prominent forwards at the base, roundish, emarginate.

STAM. Filaments four, subulate, hid beneath the upper lip of the corolla, of which two are a little shorter. Anthers somewhat cordate.

ⁿ Linn. spec. ^o Hort. kew. ^p Ibid. ^q Forster.

PIST. Germ four-parted. Style filiform, in the situation of the stamens. Stigma two-cleft, sharp, slender, reflex.

PER. none. Calyx cherishing the seeds in its bottom.

SEEDS four, ovate-oblong, three-sided.

Obs. *Dracocephalum* T. has a tubular calyx, which is inflexed, five-toothed, and equal.

Moldavica T. has a ventricose calyx, straitened at the neck, two-lipped at the mouth, with the upper-lip three-cleft and wider; lower-lip smaller, sharper, and two-parted.

That the calyx is of no consequence in the generic marks, appears from some species of *Moldavica* of *Tournefort*, which are furnished with such calyx as in *Dracocephalum*.

ESSENTIAL CHARACTER.

Cor. throat inflated, upper-lip concave.

SPECIES.

* In Spikes.

1. *Dracocephalum virginianum*. *Virginian Dragon's-head*.

Lin. spec. 828. Reich. 3. 86. hort. cliff. 308.

Sabb. hort. 3. t. 26. Breyn. ic. 33. t. 27. Riv.

mon. Mor. hist. 3. 417. f. 11. t. 4. f. 1.

Bocc. sic. t. 6. f. 3. (*Pseudodigitalis*). Barr.

ic. 1152. (*Lyfimachia*.)

Flowers crowded, leaves linear-lanceolate serrate.

[2. *Dracocephalum denticulatum*. *Denticulated Dragon's-head*.

Ait. hort. kew. 2. 317. Curtis, magaz. t. 214.

Flowers remote, leaves obovate-lanceolate denticulate above.]

3. *Dracocephalum canariense*. *Canary Dragon's-head*, or *Balm of Gilead*.

Lin. spec. 829. Reich. 86. hort. cliff. 308. mat.

med. 153. Volk. norib. t. 145. Mor. 3. 366.

t. 11. f. ult. (*Camphorosma*). Pluk. alm. t. 315.

f. 5. Sabb. hort. 3. t. 27. (*Melissa*). Comm.

hort. 2. t. 41. (*Cedronella*).

Leaves compound.

[4. *Dracocephalum pinnatum*.

Lin. spec. 829. Reich. 86. hort. upf. 165. Gmel.

fib. 3. 234. t. 52.

Leaves cordate pinnate-sinuate.

5. *Dracocephalum peregrinum*. *Prickly-leaved Dragon's-head*.

Lin. spec. 829. Reich. 87. amæn. 4. 318. Gmel.

fib. 3. 237. L'Herit. stirp. nov. 2. t. 28. ined.

Mor. 364. n. 9. f. 11. t. 5. f. 9.

Flowers somewhat spiked, stem-leaves ovate-oblong gashed, bractes linear-lanceolate denticulate-spiny.]

6. *Dracocephalum austriacum*. *Austrian Dragon's-h.*

Lin. spec. 829. Reich. 87. Jacqu. ic. collect. 1.

119. hort. cliff. 364. Herm. lugdb. 330.

(*Hyssopus*).

Ruyschiana laciniata. Mill. dict. n. 2.—*hirsuta*.

Amm. ruth. 50.

Chamæpithys austriaca. Clus. hist. 2. 185.—*cærulea*

austr. Baub. pin. 250.

Leaves and bractes linear parted spiny.

7. *Dracocephalum Ruyschiana*. *Hyssop-leaved Drag.*

Lin. spec. 830. Reich. 87. fl. suec. n. 537. hort.

upf. 165. Hall. helv. n. 254. Gmel. fib. 3. 236.

n. 59. Fl. dan. t. 121.

Ruyschiana spicata. Mill. dict. n. 1.

R. glabra. Amm. ruth. 50.

R. fl. cæruleo magno. Boerb. lugdb. 1. 172. Zanon.

nov. t. 146.

Pseudo-chamæpithys austriaca. Riv. mon. 146.

Mor. 364. t. 5. f. 9. (*Prunella*).

Leaves and bractes lanceolate undivided awnless.

** In Whorls.

8. *Dracocephalum sibiricum*. *Siberian Dragon's-head*.

Lin. spec. 830. Reich. 88. hort. upf. 164. Gmel.

fib. 3. 234. t. 51. Buxb. cent. 3. 27. t. 50. f. 1.

Ruyschiana verticillata. Mill. dict. n. 3.

Flowers subverticilled, peduncles bifid pointing one way, leaves cordate-oblong acuminate naked.

9. *Draco-*

9. *Dracocephalum Moldavica*. *Moldavian Dragon's-head* or *Balm*.
Lin. spec. 830. *Reich.* 88. *hort. upf.* 166. *mat. med.* 153. *hort. cliff.* 303. *Blackw. t.* 551.
Melissa peregrina, fol. oblongo. *Bauh. pin.* 229.
M. moldavica. *Cam. epit.* 576.
Leaves dotted underneath; bractes lanceolate, the serratures capillaceous.
10. *Dracocephalum canescens*. *Hoary Dragon's-head*.
Lin. spec. 831. *Reich.* 89. *hort. upf.* 66. *hort. cliff.* 308. *Mill. fig. t.* 129. *Comm. rar. t.* 28. (Moldavica). *Volk. norib. t.* 353. *Mor.* 389. *t. 4. f.* 18? (*Sideritis*).
Bractes oblong with spiny serratures, leaves submentose.
11. *Dracocephalum peltatum*. *Willow-leaved Drag.*
Lin. spec. 831. *Reich.* 89. *hort. upf.* 166. *cliff.* 309.
Moldavica orient. falicis folio, parvo fl. cæruleo.
Tournef. cor. 11.
Bractes orbiculate serrate-ciliate.
12. *Dracocephalum grandiflorum*. *Great-flowered D.*
Lin. spec. 830. *syft.* 543. *Reich.* 88. *suppl.* 274.
Gmel. fib. 3. 233. n. 56. Aët. petrop. 1770. 556. *t. 29. f. 3.*
D. altaïense. Lin. syft. ed. 13. 454. Reich. 89. Aët. petrop. 15. 555. t. 29. f. 3.
Leaves crenate; root-leaves cordate, stem-leaves orbiculate sessile; bractes acuminate-toothed.
13. *Dracocephalum nutans*. *Nodding Dragon's-head*.
Lin. spec. 831. *Reich.* 89. *hort. upf.* 167. *n. 2.*
Gmel. fib. 3. 231. t. 49.
Bractes oblong ovate quite entire, corollas rather large nodding.
14. *Dracocephalum thymiflorum*. *Small-flowered D.*
Lin. spec. 831. *Reich.* 90. *hort. upf.* 167. *Gmel. fib. 3. 233. t. 50. Gært. fruct. 1. 319.*
Bractes oblong quite entire, corollas scarcely larger than the calyx.
- [15. *Dracocephalum cochinchinense*.
Lour. cochinch. 371.
Flowers in spikes, bractes roundish acute, leaves ovate-lanceolate, quite entire.

DESCRIPTIONS, &c.

The species of this genus are mostly herbaceous, some few however are undershrubs. The stalks are square; the leaves opposite in pairs. The flowers are either in whorls forming all together a spike at the end of the stalk, or axillary on one-flowered or many-flowered peduncles; they are supported by bractes, which are generally broad, and sometimes ciliate; in the first species however they are narrow and very small.]

1. This rises with an upright stalk, near three feet high. Leaves about three inches long, and half an inch broad, sessile; they are usually in pairs at each joint, but sometimes there are three together. The flowers are purple, in terminating spikes, and make a pretty variety among other hardy plants. It is perennial, and flowers from July to September.

It is a native of North America, in woods, and by the sides of rivers.

[Cultivated in 1683, by Mr. James Sutherland^a.

2. Allied to the first species, but inferior in point of beauty. It spreads more on the ground; its flowering stems are not altogether so upright, nor so tall; the leaves are broader, and the flowers in the spikes less numerous. It flowers in August and September. Mr. Curtis received seeds of it from Philadelphia, collected at a considerable distance from that city, about the year 1786. And Mr. Watson, nurseryman at Islington, obtained the plant from Carolina, about the same period^b.]

3. This is a perennial plant, rising with several stalks to the height of three feet or more, becoming woody at the lower part. Leaves at each joint, having three or five, oblong, pointed, serrate leaflets. The flowers come out in short thick spikes on the top of the stalks; they are of a pale blue colour, and are produced from July to September.

[The leaves are on petioles from an inch to two inches in length, triangular, two of the angles and the joints moderately hairy. Leaves soft, wrinkled like those of Mint, veined, mostly ternate, the middle leaflet much longer than the other two; some of the lower ones have five leaflets, somewhat like those of Hemp; each leaflet an inch wide, and two inches long, mucronate and toothed. (A plant which I have now before me, October 3, 1795, has not one leaf but what is ternate, but it is an old plant, and has lost the lower leaves. The young petioles are quite white with hairs, on those which are far advanced the hairs are distinct, and perpendicular to the petiole; the lower surface of the young leaves is also very hairy, but the upper surface is bald: the petioles are not triangular, but flat and channelled above, and convex beneath. Stiff pellucid hairs, or rather tender prickles, are thinly scattered along the angles of the stem, and there are thick tufts of long white hairs at the joints.) Spikes broadish, from an inch to two inches in length. Calyx long, striated, (hairy, on a very short pedicel.) Corolla flesh-colour or pale purple, with white lines.

Native of the Canary islands, whence it was brought to Europe, by the name of *Permento de Tana*^c. The old writers call it *Camphorosma* and *Cedronella*, and we *Balm of Gilead*, from its rich odour, on being gently rubbed.

It was described by Morison in 1690^d, and was cultivated in 1697, by the Dutchess of Beaufort^e.

4. Stems shrubby, decumbent. Leaves transversely pinnatifid, obtuse with remote lobes, on long petioles. The spike is like that of *Melampyrum arvense*. The bractes are lanceolate with bristly teeth, and are often red. Corollas small; styles twice as long as the flowers.

Native of Jerkatsch, in Siberia^f.

5. Root perennial. Stems several, a long span in length, with the joints an inch asunder. Leaves like those of common Hyssop or Rosemary, moderately hoary underneath; from the axils of these come out branches with similar leaves, but smaller, and flowers at the end, with rigid calyxes, and corollas of a very elegant blue-purple colour. Seeds oblong, angular, blackish^g.

Native of Siberia. Cultivated before 1699, by Mr. Jacob Bobart^h.]

6. Root perennial. Stalks hairy, a foot and half high, sending out several side-branches. Leaves hairy, linear, cut into three parts. Flowers terminating in short whorled spikes, with some very narrow leaves (bractes) under each whorl. Tube of the corolla longer and more equal than that of the next species, and the middle segment of the lower lip not so much reflexed.

[This is a beautiful plant and grows in Austria, where it was first observed by Clusius. It varies according to its soil in point of number of stems, &c. The stems are annual, squarish, and villose: the leaves opposite; hoary below, smooth and green above, and are deeply lobed or cut in a pinnatifid manner. The flowers are axillary on the upper part of the plant, commonly in pairs, sometimes in threes; and are of a violet-purple colour, paler withoutⁱ.

Native of Austria and Hungary. Introduced 1788, by Jos. Nîch. de Jacquin, M.D.^k—If so, it is not the same with Miller's or Amman's plant.]

7. Root perennial. Stems about two feet high with two smooth linear leaves at each joint, about an inch long, and one-eighth of an inch broad, with a deep furrow along the middle: at each joint, at the other sides of the stem, come out two or three very narrow small leaves of the same shape. The calyxes are cut into five segments at top, of which four are narrow and acute; and the fifth, which is on the upper side of the flower, is broader and

^a Morison.^g Morison.^d Linn. syft.^h Hort. kew. from Mor.^k Hort. kew.^e Hort. kew.^f Linn. spec.ⁱ Jacquin.^a Hort. kew.^b Curtis magaz.

rounded at the point. The tube of the corolla is longer than the calyx, swelling and large at the chaps; the upper lip broad, erect and arched over the tube; the lower shorter, with two short, erect side segments, but the middle segment is broad, rounded and indented at the point, and reflex. The flowers appear in June, and are of a fine blue colour.

[Stems numerous, a foot in height, with a branch from the axil of each leaf. The leaves are apt to contract their edges. Whorls on two branches, having about six flowers in each, on short peduncles. These whorls on the topmost branches are continued into spikes. Corolla an inch long and hirsute; the wings of the chaps ovate and lanceolate; beard bifid, ferrate, spotted. Anthers black; pollen white¹.

Native of Norway, Sweden, Switzerland, Siberia. Cultivated in 1758, by Mr. Miller^a.

This and the foregoing species, were separated by Boerhaave, and made a distinct genus, under the name of *Ruyfchiana*, in honour of Dr. Ruyfch, who was professor of anatomy and botany at Amsterdam.]

8. The stalks of this do not grow erect, like the preceding, but spread nearer to an horizontal position; they divide into several branches, which have a pair of large leaves at each joint, and four smaller, two on each side; they are smooth, have sharp indentures on their edges, and stand erect. The flowers come out from the side of the stalks at the base of the leaves, two or three together on each side. Calyx purple, cut into five acute segments, three broad in the upper lip, two narrower in the lower. Upper lip of the corolla broad, indented at the point and erect; lower trifid, but the middle segment not so much reflexed as that of the preceding; and the whole of a paler blue.

[The chaps of the corolla are broad and almost inflated; the upper lip is compressed and bifid; the lower toothletted, and villose in front: the two upper stamens are hirsute at the base.

Native of Siberia^a.—Introduced in 1760, by Mr. James Gordon^o.

This, and all the foregoing species, are perennial. The third is marked in the Kew catalogue as biennial.]

9. This is an annual plant, rising with branching stalks a foot and half high, with oblong leaves, deeply ferrate on their edges. The flowers come out in whorls round the stalks at every joint; they are blue, and appear in July, continuing to the middle of August. The seeds ripen in September. The plant has a strong balsamic odour, which to some persons is very agreeable.

Native of Moldavia. [Cultivated in 1596, by Gerarde.]

10. This has hoary stalks, a foot and half high, putting out two or three side branches, with hoary leaves near two inches long, and half an inch broad, a little indented on their edges; they are placed just under the whorls of flowers, which sit close to the stalk: the corolla is large, of a fine blue colour, and makes a pretty appearance among the hoary leaves. It flowers and seeds about the same time as the foregoing sort, and is generally treated as an annual, but the roots will live two years in a dry soil. There is a variety with white flowers.

Discovered by Tournefort in the Levant.

[Cultivated in 1712^p.]

11. This is an annual plant, about a foot high, sending out two small branches from the lower part. Leaves lanceolate, crenate, petioled. Flowers small, purplish; coming out at the same time with the two foregoing.

Native of the Levant, whence Tournefort sent the seeds to the royal garden at Paris.

[Cultivated in 1731^q.]

The fourth species of Miller seems not to differ from this.]

12. Root-leaves like those of Bétony, petioled, obtuse, wrinkled, pubescent; stem-leaves almost wedge-shaped, rounded, very obtuse, crenate-toothed. Bractes two on each side, very obtuse, the length of the calyx; besides two minute, lanceolate little bractes, belonging to the lateral flowers. [The bractes and floral leaves are somewhat of a violet colour^r.

The whorls have the flowers by threes on each side. Calyxes subpeduncled, five-cleft, the three upper teeth less divided. Corollas large, blue; the chaps much inflated, with a rising streak at the back on each side: upper lip bifid; lower trifid; the middle segment larger, dark-blue, reflex, bearded at the end. Anthers oblong.

Native of the Siberian alps.—That which was described in the *Species plantarum* is a mere variety of this^s. Native of Siberia. Introduced in 1783, by Mr. John Bell^t.]

13. This also is annual. Stalks many, weak, about nine inches high, having at bottom ovate-lanceolate leaves about two inches long, and an inch and quarter broad, crenate, and on pretty long foot-stalks. The upper part of the stalks has smaller leaves, sitting close at the joints, and from these come out the flowers in whorls; they are of a deep blue colour, and hang down, appear at the same time with the preceding, and the seeds ripen in autumn.

Native of Siberia, whence the seeds were sent to the Imperial garden at Petersburg. Dr. Amman sent the seeds to Mr. Miller, who cultivated them before 1768.

14. The stalks of this rise a foot and half high. The lower leaves are very like those of Bétony, and stand upon very long foot-stalks: the upper leaves are small, and sit closer to the stalks. The flowers come out in whorls at every joint, they are of a pale purple or blue colour, and being small make little appearance.

[Seeds small, ovate-oblong, slightly convex on one side, angular on the other, dark chestnut colour^u.

Native of Siberia. Cultivated by Mr. Miller in 1759^x.

15. Stem herbaceous, ten inches high, erect, grooved, villose. Leaves villose, few. Flowers violet-coloured, in terminating spikes. Bractes many-flowered. Filaments hairy.

Native of Cochinchina^v.]

PROPAGATION AND CULTURE.

1. This will live in the open air, but requires a moist soil, or should be duly watered in dry weather, otherwise the leaves will shrink, and the flowers make little appearance. It may be allowed a place in the shady borders of a garden, for it will not ramble, nor take up much room; and may be propagated by parting the roots in autumn.

[2. This, as well as the first, is a hardy perennial, multiplying considerably by its roots, which creep in some degree; it must be planted in a moist soil and shady situation^w.]

3. Balm of Gilead is usually kept in the greenhouse; but in mild winters the plants will live abroad in warm borders; and those which are kept in pots will thrive much better when sheltered under a frame than in a greenhouse, where the plants are apt to draw up weak; for they should have as much free air as possible in mild weather, and only require to be sheltered from severe frost. This may be propagated by seeds, which, if sown in autumn, will more certainly grow, than those which are sown in the spring; but if these are sown in pots, they must be sheltered under a frame in the winter, and if the plants do not come up the same autumn, they will arise in the spring; but if the seeds are sown in the full ground, it should be in a warm border; and in hard frost they should be sheltered, otherwise the young plants will be de-

¹ Haller. ^a Hort. kew. ^b Linn. spec. ^c Hort. kew.
^p Ibid. ^q Ibid. from Mill. dict. edit. 1.

^r Linn. syst. ^s Linn. suppl. ^t Hort. kew. ^u Gartner.
^v Hort. kew. ^w Loureiro. ^x Curtis magaz.

stroyed. The plants may also be propagated by cuttings; which, if planted in a shady border any time in summer, will very soon take root, and furnish plenty of rooted plants.

6, 7, 8. These plants are propagated by seed, which should be sown the latter end of march, in a bed of fresh light earth in an open exposure, and in about five or six weeks after, the plants will appear, when they should be carefully cleared from weeds; and if the season should prove dry, they must be refreshed now and then with water, which will greatly promote their growth. When the plants are about two inches high, they should be carefully transplanted into a bed or border of fresh, light, undunged earth, observing to shade them from the sun until they have taken root, as also to refresh them with water until they are well established in this bed; after which time they will require no farther care, but to keep them constantly clear from weeds till michaelmas, when they are to be removed into the places where they are designed to remain for good.

When the plants are first transplanted from the seed-bed into the nursery-bed, they should be planted about six inches asunder every way, which will be sufficient room for them the first season; and this will admit of the hoe to come between the plants to destroy the weeds, which is by much a better method than pulling out the weeds by hand, and is much sooner performed. For as the hoe stirs the ground between the plants, it not only cuts down the weeds which were up and visible, but also destroys all those whose seeds were sprouted, and would have soon after appeared; so that one hoeing, if well performed, and in dry weather, will more effectually destroy the weeds than two hand-weedings would do, were they performed ever so carefully; besides, the stirring the ground is of great service to the plants.

At michaelmas, when the plants are transplanted for good, they should be carefully taken up with balls of earth to their roots; and they must be planted in the middle of the borders in the pleasure-garden, in fresh light earth, intermixing them with other hardy plants of the same growth, where they will make a pretty appearance when they are in flower, and will continue three or four years; and in some poor stony soils I have known the roots live six or seven years, but these did not produce so large spikes of flowers as those which were younger and more vigorous plants. Therefore, as these plants do not continue many years, it will be proper to raise a supply of young plants to succeed them, for the old plants will produce seeds plentifully, which are ripe the latter end of august or the beginning of september, when they should be gathered in dry weather, and kept in a warm dry room till the time for sowing them.

9—14. All these sorts may be propagated by seeds, which may be sown either in the spring or autumn in small patches upon the borders where they are to remain. When the plants come up, they should be thinned where they grow too near together, and kept clear from weeds.

DRACOCEPHALUS. See *Dracocephalum* and *Chelone*.

DRACONTIUM. (*Δρακοντίον* of *Theophrastus*, and *Dioscorides*; from *Δράκων*, a dragon.)

Lin. gen. n. 1029. *Reich.* 1120. *Schreb.* 630. *Juss.* 24.

Class. 20. 8. Gynandria Polyandria—Heptandria Monogynia. *Schreb.*

Nat. order of *Piperitæ*.—*Aroideæ*. *Juss.*

GENERIC CHARACTER.

Cal. *Spathe* boat-form, leathery, one-valved, very large.

Spadix extremely simple, cylindric, very short, coated on all sides with fructifications disposed into a head, of each of which the

Perianth proper none, unless you call the corolla so.

Cor. proper five-petalled, concave: *Petals* ovate, obtuse, somewhat equal, coloured.

STAM. In each *filaments* seven, linear, depressed, upright, equal, longer than the corollet. *Antthers* four-cornered, twin, oblong, obtuse, upright.

PIST. Germ somewhat ovate. *Style* columnar, straight, length of the *stamens*. *Stigma* obscure, three-sided.

PER. in each a roundish *Berry*.

SEEDS very many.

ESSENTIAL CHARACTER.

Spathe boat-form. *Spadix* covered. Cal. none.

Petals five. *Berries* many-seeded.

SPECIES.

1. *Dracontium polyphyllum*.

Lin. spec. 1372. *Reich.* 4. 74. *hort. cliff.* 434.

Thunb. jap. 234. *Herm. par. t.* 93. *Pluk.*

alm. t. 149. *f.* 1. (*Arum*).

Scape very short, *petiole* rooted, torn, *leaflets* three-parted, *divisions* pinnatifid.

2. *Dracontium spinosum*.

Lin. spec. 1372. *Reich.* 74. *Fl. zeyl. n.* 328.

Arum zeylanicum, &c. *Herm. par.* 75. *Raii*

suppl. 575.

Leaves sagittate, peduncles and petioles prickly.

[5. *Dracontium foetidum*. *Fetid Dragon*, or *Scunk-weed*.

Lin. spec. 1372. *Reich.* 74. *Cold. noveb.* 214.

Kalm. itin. 3. 47. *edit. engl.* 2. 90. *Gron. virg.*

141—186. *Catesb. car. 2. t.* 71. (*Arum*).

Leaves roundish.]

4. *Dracontium camschatcense*.

Lin. spec. 1372. *Reich.* 74. *amæn.* 2. 360.

Leaves lanceolate.

5. *Dracontium pertusum*. *Perforate-leaved Dragon*.

Lin. spec. 1372. *Reich.* 74. *Mill. fig. t.* 296.

Plum. amer. 40. *t.* 56, 57. (*Arum*).

Leaves perforated, stem climbing.]

DESCRIPTIONS, &c.

1. This has a large knobbed irregular root, covered with a rugged brown skin. The stalk rises about a foot high, is smooth, and of a purple colour, full of sharp protuberancies of different colours, shining like the skin of a serpent; it is naked to the top, where it has a tuft of leaves, which are divided into many parts. The flower-stalk rises immediately from the root, and is seldom more than three inches high; having an oblong swelling hood (or spathe) at top, which opens lengthwise, showing the short thick pointed style within, upon which the flowers are closely ranged.

It grows naturally in several of the islands of America. Mr. Miller received roots of it from Barbuda: [also in Surinam, and Japan, where they prepare a medicine from the acrid roots, which they call Konjakf, and esteem as a great emmenagogue; dissolute women use it there to procure abortion*. In the Society isles it is cultivated for the sake of the roots, which are eaten in a scarcity of the Bread-fruit, notwithstanding their extreme acrimony^b.]

2. This has an oblong thick root full of joints, from which arise several leaves, shaped like those of the common *Arum*, but their foot-stalks are covered with rough protuberancies. The stalk which supports the flower is short, and set with the like protuberancies, and at the top is a spathe, about four inches long, as thick as a man's finger, which opens longitudinally, and exposes the spadix, which is set with flowers.

It grows naturally in the island of Ceylon, and in several parts of India.

[3. The flowers appear first; after they are arrived to a state of perfection, the leaves come out at a small distance, in a conic form, very closely rolled together. They are nearly ovate when expanded, and petioled. The plant has no stem. The globe of flowers is nearly the colour of the spathe, which is beautifully variegated with scarlet and yellow. The corolla has four, erect, very thick, narrow, obtruncated petals. The stamens have four flattish filaments rising from the receptacle, longer than the corolla. Style rather longer than the

* *Thunb. jap. & trav.* 3. 163. *engl. edit.*

^b *Forster. escul.* 61.

stamens:

filaments: stigma bifid. Seeds large, roundish, single, inclosed within the receptacle.

Native of North America, in swamps and borders of meadows; april and may.—The vulgar names of Scunk Cabbage and Scunkweed are taken from its rank smell, nearly resembling that of a Scunk or Polecat.

The roots dried and powdered are an excellent remedy in asthmatic cases. It may be given with safety, to children, in doses of four, five or six grains, and to adults, in doses of twenty grains and upwards. It appears to be antispasmodic, and bids fair to be useful in many disorders. In collecting the roots, particular care ought to be taken that the *white bellebore*, or *poke-root*, which some call Scunkweed, be not mistaken for this.—There is an obvious distinction, the former has a stalk, but this has none^c.

Cattle do not touch it during the summer. The Swedes settled in North America call it *Byorn-blad*, or *Byorn-retter* (Bear's-leaf or Bear's-root): because the Bears, when they leave their winter habitations in the spring, are very fond of it^d.]

4. This has roots like the common Arum, and the leaves come out each on a separate foot-stalk, immediately from the root, as in that plant. It has not flowered in England. Siberia is its native country.

5. This has slender jointed stalks, which put out roots at every joint, that fasten to the trunks of trees, walls, or any support which is near them, and thereby rise to the height of twenty-five or thirty feet. The leaves are placed alternately, standing upon long foot-stalks; they are four or five inches long, and two and a half broad, having several oblong holes in each, so that on the first view they appear as if eaten by insects. The flowers are produced at the top of the stalk, which always swells to a larger size in that part than in any other; these are covered with an oblong spatha (or hood) of a whitish green colour, which opens longitudinally on one side, and shews the spadix closely covered with flowers, of a pale yellow, inclining to white. When this plant begins to flower, it seldom advances farther in height, so that these seldom are more than seven or eight feet high; but the leaves are much larger on these, than those of the plants which ramble much farther.

It grows naturally in most of the islands in the West-Indies, [and in the island of Tanna in the South Seas; and was cultivated by Mr. Miller in 1752^e.

Quebitea of Aublet (guian. t. 327.) is probably to be referred to this genus^f.]

PROPAGATION AND CULTURE.

1, 2. These sorts being tender, require a warm stove to preserve them in England. The roots must be planted in pots filled with light kitchen-garden earth, and plunged into the tan-bed in the stove, where they should constantly remain; in the winter they must be watered very sparingly, but in warm weather, when the plants are in vigour, they must be often refreshed, but it should not be given them in too great quantities; with this management the plants will flower, but their roots do not increase here.

4. This requires a shady situation, and will bear the greatest cold of this country.

5. This plant is easily propagated by cuttings, which, if planted in pots filled with poor sandy earth, and plunged into a hot-bed, will soon put out roots, if they had none before; but there are few of the joints which have not roots: the plants being tender, will not live in the open air in England, therefore the pots should be placed near the walls of the hot-house, against which the plants will climb, and fasten their roots into the wall, and thereby support the stalks. They should have but little water given them in the winter, but in warm

weather it must be given them three or four times a week, and in the summer the free air should be admitted to them in plenty. The plants have no particular season of flowering, for they sometimes flower in autumn, and at other times in the spring, but they do not ripen their seeds in England.

These plants are preserved in the gardens of the curious in England and Holland, more for the sake of variety than for beauty; for except the fifth sort, there is not any of them which make much appearance; that indeed may be suffered to have a place against the wall of the stove, over which it will spread, and cover the nakedness of the wall; and the leaves, which are so remarkably perforated, remaining all the year, make a singular appearance.

All the other sorts of Dragon being tender plants, will not live in this country, unless they are preserved in the warmest stoves; the several American sorts grow naturally in the woods in Jamaica, and other hot parts of America; the climbing sorts twist themselves round the trunks of trees, into which they fasten their roots, which are sent forth from their joints, and rise to the height of thirty or forty feet. These climbing sorts are easily propagated by cuttings, which, being very succulent, may be brought over to England in a box of dry hay, if they are packed up separate, so as not to injure each other by the moisture, which is apt to flow out at the part where they are cut off, which may occasion a fermentation, and thereby rot the cuttings. When the cuttings arrive, they should be planted in small pots filled with light fresh earth, and plunged into a hot-bed of tanner's bark, being very careful not to let them have too much moisture until they have taken root, lest it rot them: when they have taken root, they must be frequently refreshed with water; and when they are grown pretty large, they should be placed in the bark-bed in the stove, where they must be placed near some strong plants, to which they may fasten themselves, otherwise they will not thrive; for though they will send forth roots at their joints, which will fasten to the mortar of the stove, when placed against the wall, yet they will not thrive near so well as against a strong plant, which will afford them nourishment.

The other sorts are propagated by off-sets from their roots; these may be procured from the countries of their growth, and should be planted in tubs of earth, about a month before they are put on board the ship to transport them; these tubs should be placed in a shady situation until they have taken root. In their passage great care should be had to keep them from salt water, as also not to let them have too much water given them; for if they have a little water once or twice a week at most, while they are in a hot climate, and when they are come into a cooler climate, once in a fortnight, this will be sufficient for them; and it should be done sparingly, lest it rot them; for if the tops of the plants should decay for want of water in their passage, if the roots are not rotted, they will soon recover with proper care.

When the plants arrive, they should be transplanted into pots filled with light fresh earth, and plunged into a hot-bed of tanner's bark, and gently watered until they have taken good root, after which time they will require to be frequently refreshed with water; but as their stems are very succulent, they must not have too much moisture. These plants should be constantly kept in the stove, where, in hot weather, they should have fresh air admitted to them; but in winter they must be kept very warm, otherwise they cannot be preserved in this country.

These plants will rise to the height of three, four, or five feet, and will afford a very agreeable variety amongst other tender exotic plants in the stove.

DRACONTIUM. See *Arum* and *Pothos*.

DRACUNCULOIDES. See *Hæmantbus*.

DRACUNCULUS. See *Achillea*, *Artemisia*, *Arum Calla*, *Pothos*, *Rudbeckia*.

DRAGON. See *Arum* and *Dracontium*.

DRAGON'S-HEAD. See *Dracocephalum*.

^c Cutler in mem. amer. acad. 1. 407.

^e Hort. kew.

^d Kalm.

^f Jussieu.

DRAGON TREE. See *Dracæna*.

DRAINING. See *Land*.

DRAKENA. See *Dorstenia*.

DRILLING. See *Hoeing*.

DROPPORT. See *Spiræa*.

—, Water. See *Oenanthe*.

DROSERÁ. (From *δρῶσρος*, Dewy, which is from *Δρῶσρος*, Dew. Drops hanging on the leaves, like Dew.)

Fr. *Rosselia*. Engl. *Sundew*.

[*Lin. gen. n.* 391. *Reich.* 421. *Schreb.* 531.

Gærtn. 61. *Juss.* 245. *Ros Solis*. *Tourn.* 127.

Class. 5. 5. Pentandria Pentagynia.

Nat. order of *Gruinales*.—*Capparides*. *Juss.*

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-cleft, sharp, upright, permanent.

COR. funnel-form. Petals five, somewhat ovate, obtuse, rather larger than the calyx, and alternate with it.

STAM. Filaments five, subulate, length of the calyx, and alternate with the petals. Anthers small, growing to the filaments.

PIST. Germ superior, roundish. Styles five, simple, length of the stamens. Stigmas simple.

PER. Capsule surrounded with the calyx, somewhat ovate, one-celled, three, four or five-valved at the tip.

SEEDS very many, very small, somewhat ovate, scabrous, fixed to a branching loose receptacle in the centre at bottom.

OBS. In *Drosera lusitanica* there are ten stamens. R. In *D. rotundifolia* and *longifolia*, six styles; in *longifolia* β. 8. styles. H. The number of openings in the capsule uncertain.

ESSENTIAL CHARACTER.

Cal. five-cleft. Pet. five. Caps. one-celled, five (or three) valved at the tip. Seeds very many.

SPECIES.

1. *Drosera acaulis*.

Lin. syst. 303. *suppl.* 188.

Flower radical, without any scape, solitary, leaves oblong.

2. *Drosera cuneifolia*. Wedge-leaved Sun-dew.

Lin. syst. 304. *suppl.* 108.

Scapes radicate, leaves wedge-form-rounded.

3. *Drosera rotundifolia*. Round-leaved Sun-dew.

Lin. spec. 402. *Reich.* 1. 766. *fl. lapp. n.* 109.

fuéc. n. 273. *mat. med.* 91. *fl. zeyl. n.* 120.

Huds. angl. 135. *With.* 331. *Relb. cant. n.* 255.

Lightf. scot. 175. *Pollich. pal. n.* 322. *Villars*

dauph. 2. 549. *Krock. files. n.* 493. *Blackw.*

t. 432. *Plenck, ic. t.* 247. *f. 1.* *Lour. cochinch.*

186.

Corella rotundifolia. *Allion. pedem. n.* 1601. *Hall.*

helv. n. 834.

Rosfolis septemtrionalis. *Scop. carn. n.* 390.

Ros folis. *Bauh. hist.* 3. 761. 2. *Burm. zeyl.* 207.

t. 94. *f. 2.*—major. *Ger.* 1366. 1. *Park. theat.*

1052. 1. b. c.—fol. rotundo. *Bauh. pin.* 357.

Ger. emac. 1556. 1. *Raii hist.* 1100. *syn.* 356.

Barrel. ic. 251. 1. *Petiv. brit. t.* 63. *f. 10.*

Rorida, f. Ros folis major, *Lob. ic.* 811.

Salifiora f. Ros folis. *Thal. herc. t.* 9. *f. 1.*

β. *Corella rotundifolia perennis*. *Raii syn.* 356.

hist. 1100.

Scapes radicate, leaves orbiculate (styles 6. H.)

4. *Drosera longifolia*. Long-leaved Sun-dew.

Lin. spec. 403. *Reich.* 766. *fl. lap. n.* 110. *fuéc.*

n. 274. *Huds. angl.* 135. *With.* 332. *Relb.*

cant. n. 256. *Lightf. scot.* 175. *Pollich. pal.*

n. 323. *Krock. files. n.* 494. *Villars dauph.*

2. 549. *Gærtn. fruct.* 291. *Plenck, ic. t.* 247.

f. 2.

Corella longifolia. *Allion. pedem. n.* 1600. *Hall.*

helv. n. 833.

Ros folis. *Dod.* 474. 2.—minor. *Ger.* 1366. 2.

Bauh. hist. 3. 761. 1.—*sylvestris longifolius*.

Park. theat. 1052. 1. a.—fol. oblongo. *Bauh.*

pin. 357. *Ger. emac.* 1556. 2. *Raii hist.* 1100.

syn. 356. *Petiv. brit. t.* 63. *f. 11.* *Mor. hist.*

f. 15. t. 4. f. 2.—major *f. longifolius*. *Barrel.*

ic. 251. 11.

Salifiora, f. sponsa folis, f. ros folis, f. rorella. *Thal.*

herc. 116. *t. 9. f. 2.*

β. *Dr. anglica*. *Huds. angl.* 135. *With.* 332.

Corella longifolia maxima. *Raii hist.* 1100. *syn.*

356. *Mor.* 15. 4. *fig. last. row. 1.* *Pet.* 63. 12.

Park. 1052. 2.

γ. *R. longif. perennis*. *Raii syn.* 356. *hist.* 1100.

Scapes radicate, leaves ovate-oblong; (styles six; in

var. β. 8. *Huds.*)

5. *Drosera capensis*. Cape Sun-dew.

Lin. spec. 403. *Reich.* 767. *mant.* 360. *Berg.*

cap. 81. *Burm. afr.* 209. *t.* 75. *f. 1.* *Raii*

suppl. 515. *Herm. afr.* 19. (*Ros folis.*)

Scapes radicate, leaves lanceolate, scabrous under-

neath.

6. *Drosera lusitanica*. Portuguese Sun-dew.

Lin. spec. 403. *syst.* 304. *Reich.* 767. *mant.* 360.

Ros folis lusitanicus, fol. asphodeli minoris. *Mor.*

hist. 3. 620. *f. 15. t. 4. f. 4.* *Pluk. alm. t.* 117.

f. 2. *Raii suppl.* 551.

Scapes radicate, leaves subulate, convex underneath,

flowers ten-stamened.

7. *Drosera cistiflora*. Cistus-flowered Sun-dew.

Lin. spec. 403. *syst.* 304. *Reich.* 767. *amæn.* 6.

afr. 7. *Burm. afr.* 210. *t.* 75. *f. 2.* *Breyn.*

prodr. 3. *t.* 22. *f. 2.* *Raii suppl.* 515. 1. (*Ros*

folis.)

Stem simple, leafy, leaves lanceolate.

8. *Drosera indica*.

Lin. spec. 403. *Reich.* 768. *fl. zeyl. n.* 121.

Rheed. mal. 10. *t.* 20. *Burm. zeyl.* 207. *t.* 94.

f. 1.

Stem branched, leafy, leaves linear.

9. *Drosera umbellata*.

Lour. cochinch. 186.

Scapes rooted, leaves ovate, flowers umbelled.

DESCRIPTIONS, &c.

These are herbs of a small size, and singular structure. The leaves, in most of the species, only next the root, furnished with glandulous hairs on the upper surface, and fringed with them round the edge: these hairs have each a small globule of a pellucid liquor like dew, continuing even in the hottest part of the day, and in the fullest exposure to the sun. Hence their English name of *Sun-dew*.

1. This is singular for having a sessile flower in the bosom of the root-leaves^a.

2. It resembles the next species, but is larger, and has sessile leaves, rounded at the summit, but gently attenuated towards the base. This and the foregoing are natives of the Cape of Good Hope, where they were first observed by Thunberg^b.

3. Root perennial, black. Root-leaves many, forming a tuft, two or three lines in length and breadth, set with red hairs about the edge, and on the upper surface, the under surface smooth; the petioles red, and half an inch or eight lines in length, ciliate at the base. Scape erect, round, slender, simple, three or four inches in height. Flowers in a kind of racemed spike, bent in at the top before flowering time; they point one way, are alternate, erect, and from six to eleven in number; the peduncles are half a line or a line in length. Corolla white: calyx smooth: stigmas obtuse, white. Bractes none.—Flowers open from nine to twelve^c. The young leaves, before they are expanded, are rolled inwards, and at the same time bent in to the very peduncle. *Drosera* and *Utricularia* are the only two plants which are common to Sweden and the East-Indies, and they are both water plants^d. And Linneus remarks that *Drosera* is a native of all the four continents^e, on bogs. The East-Indian plant, however, is probably different from the European, and Vahl has separated it under the name of *Drosera Burmanni*; with radicate scapes and smooth calyxes, the leaves spatulate and sessile. He

^a Linn. suppl.

^b Ibid.

^c Pollich & Krock.

^d Ibid & Linn. fuéc.

^e Linn. zeyl.

adds, that the leaves are attenuated at the base, a quarter of an inch in length, and that the cilia are slender and equal. It is distinct from the preceding species (*D. cuneifolia*) in the smoothness of the scape and pedicels, and in being only one third of the size^f. If this be a genuine species, the synonyms of the *Flora Zeylanica*, Burmann and Loureiro must be applied to it.

With us *D. rotundifolia* flowers in July and August: and is found on Hampstead heath; at Battle's well near Harefield, and Iwer heath; on Hinton and Teversham moors and Gamlingay bogs in Cambridgeshire: on Malvern chase—Birmingham heath—Selborne in Hampshire—Ludgvan Lee, on the Barton and Moors; and Senan, in Torvorian Commons; Cornwall.—Halston in Northamptonshire.—Near Mansfield and Oxtun in Nottinghamshire. In Scotland frequent.

β. Observed in Devonshire by Tho. Willifel.

The whole plant is acrid and sufficiently caustic to erode the skin; some ladies, however, know how to mix the juice with milk, so as to make it an innocent and safe application to remove freckles and sun-burn. The juice that exudes from it unmixed will destroy warts and corns.—The plant has the same effect upon milk as the *Pinguicula vulgaris*; and like that, too, is supposed to occasion the rot in sheep. Is not the four coagulated milk of the Syrians, called *Leban* or *Leven*, at first prepared with some plant of this kind^g?

It is called in English *Sun-dew*, *Youth-woort*; in the north parts *Red-rot*, and in Yorkshire *Moore-grasse*^h; in German, *Sonnenbau*, *Sindau*, *Löfflein-kraut*; in Dutch, *Zonnedaauw*, or *Loepigkruid*; in Danish, *Soeldug* or *Himmeldug*; in Swedish, *Marie-Silefbar*; in Smoland, *Daggort*; in Italian, *Rugiada del Sole*; in Spanish, *Rociada*, or *rocio del sol*; in Portuguese, *Rossolina*; in Russian, *Solneznaja trawa*.

4. Linneus is of opinion that this is scarcely specifically distinct from the foregoing, since they agree in every thing except the form of the leaves. Pollich affirms that the former has no bractes. Lyons (M. S. in Relh. cant.) writes that the latter has very small, sharp bractes, the length of the peduncles.—According to Hudson they have both six styles, and three-valved capsules. Gærtner informs us that the capsule opens to the middle into three, four or five valves. Scopoli does not hesitate to join this and the round-leaved Sun-dew together, and affirms that he has many specimens showing a gradual change from the one to the other. Haller will not allow that they ever change one to the other.—This seems not to be so common as the round-leaved sort; Mr. Woodward, however, informs us that it is frequent in Norfolk; and Mr. Lightfoot, that it is so also in Scotland. On Brigsteer moss near Kendal, it grows to twice or thrice the size it does about London.—It is also found on Hinton moor near Cambridge: on Bagshot heath in Surrey; and at Selborne in Hants.

β. Great Sun-dew, which Mr. Hudson makes a distinct species, because it is larger, has eight styles, and four-valved capsules: is common, as he informs us, in the northern counties; also in Devonshire, Hampshire and Norfolk; three miles from Carlisle towards Scotland; where Mr. Dickson found it near Fort Augustus. Near Ellesmere in Shropshire, and in Ireland.

γ. Found by Tho. Willifel in Yorkshire between Doncaster and Bautrey; and by Mr. J. Sherard on Westfield down near Hastings.

These plants have the same property with *Dionæa Muscipula*, of entrapping small insects within their folded leaves. It was discovered by Mr. Whately, a surgeon, in August 1780. On inspecting some of the contracted leaves, he observed a fly in close imprisonment; and on centrically pressing other leaves, yet in their expanded form, with a pin, he observed a sudden elastic spring of them, so as to become inverted upwards, and as it were encircling the pin.

^f Symb. 3. 50.

^g Withering.

^h Gerard.

The same account occurs in a German author (Wroth. beytrag. p. 64.) in July 1779. An ant was placed on the middle of a leaf; the insect endeavoured to escape, but was held fast by the clammy juice at the points of the hairs: in some minutes the short hairs on the disk of the leaf began to bend, then the long hairs, and laid themselves upon the ant: after a while the leaf began to bend, and in some hours the end of the leaf was so bent inwards as to touch the base. The ant died in fifteen minutesⁱ.

5. Root putting out spiral threads. Leaves scabrous, with tubercles underneath. Flowers violet-coloured. Native of the Cape of Good Hope^k.

6. The stem has a few leaves on it, and from two to four peduncled flowers at the end. Capsule twice as long as the calyx. The whole plant has bristles glandular at the tip^l. Ray will not allow it to be a species of this genus. Alstroemer observed that it had constantly ten stamens; and therefore it would be an *Oxalis*, if the flowers were in an umbel, and the peculiar property of the leaves, together with its one-celled capsule, did not detain it in this genus.—Native of Portugal^m. Collected there by Tournefort.

7. Stems a foot high, pubescent. Leaves alternate, with glutinous hairs. Flowers terminating, one to three, large, on pedunclesⁿ. The bottom of the corolla dark. Stamens black, the length of the calyx: anthers yellow, cordate. Pistil black: germ ovate, and round the top, but not on the top of it, five black styles, the length of the corolla, stigmas several times dichotomous, even into hairs^o. Native of the Cape of Good Hope.

8. Stem herbaceous, a little branched. Leaves alternate, petioled. Peduncles axillary, with two or three flowers^p. Native of the East-Indies.

The Ceylonese call it *Kandulaessa*, from *Kandula*, a tear: the leaves being surrounded by drops, as in our European species. The stem is half a foot high, and very slender. The leaves are extremely fine, and come out alternately all over the stem and branches, and are bent upwards at the ends. The peduncles are the length of the leaves, or longer, and sustain three flowers or more; but the weaker only one^q.

9. Stem none. Leaves next the ground only on long petioles. Scapes various, naked, five inches long, terminated by an umbellule of about five flowers, with corollas of five petals. Native of China^r.

PROPAGATION AND CULTURE.

These plants are not easily preserved in gardens. They must be taken from their native bogs, with a sufficient quantity of bog-earth and water moss, and planted in pots, set in pans constantly supplied with water. They will succeed better if defended from the sun, and well enveloped in moss kept constantly wet.

DRYANDRA. (So named by Thunberg in honour of his most beloved friend Jonas Dryander, M.A. a Swede, and most excellent botanist^s. Now Librarian to Sir Joseph Banks, and the Royal and Linnean Societies.)

Thunb. gen. nov. 60. Fl. jap. 13. Juss. 389.

Lin. gen. ed. Schreb. n. 1557.

Class. 16. 4. Dioecia Monadelphia.

Nat. order of *Tricocceæ*.—*Euphorbiæ*. Juss.

GENERIC CHARACTER.

* Male.

CAL. Perianth two-leaved; divisions ovate, acute, shorter than the corolla.

COR. five-petalled. Petals obovate-oblong, from reflex patulous, unguicular.

STAM. Filaments nine, united below into one body, unequal, shorter by half than the corolla. Anthers minute.

* Female.

ⁱ With. arr. p. 322 to 334.

^m Linn. spec.

^p Linn. zeyl.

^k Bergius.

ⁿ Linn. amoen.

^q Burm.

^r Thunb. jap.

^l Linn. mant.

^o Linn. syst.

^s Loureiro.

PER. tricoecous or tetracoecous, three-grooved or four-grooved, wrinkled, fleshy.

SEEDS solitary, oblong.

OBS. *What Thunberg calls the corolla, Jussieu names the calyx.*

ESSENTIAL CHARACTER.

Cal. two-leaved. Cor. five-petalled.—Or, Cal. five-leaved; resembling a corolla, surrounded by a two or three-leaved calycle. Stam. nine. Fruit three or four-grained.

SPECIES.

1. *Dryandra cordata*.

Lin. syst. 612. *Thunb. jap.* 267. t. 27. *Kämpf. amæn.* 5. 789. *ic. select.* t. 23.

D. oleifera. *Lamarck encycl.* 2. 329.

DESCRIPTION, &c.

Stem arboreous, a fathom or more in height. Branches round, with a wrinkled back, dotted, smooth. Leaves at the ends of the twigs, approximate, alternate, petioled, cordate, acute, entire, five-nerved, the nerves branching, smooth, paler underneath, spreading, a hand in length and breadth. Petioles almost the length of the leaf, round. Flowers terminating, in a panicle, the branches of which are dichotomous or trichotomous, and patulous. Petals yellow. From the seeds they express an oil for lamps, and the table^b.

Stipules caducous; the end of the petiole glandulous. Peduncles among the leaves terminating, three or four-flowered.—*Elæococca* of Commerçon, commonly called *Arbre d'huile* or Oil-tree, if not the same with this, is of this genus. It has usually ten stamens, the outer shorter, and five oily seeds^c.

Since Lamarck, from Commerçon's specimens, describes the peduncles on the female tree as simple and one-flowered, which in Kämpfer's figure are compound, we are not certain that the tree cultivated in the royal garden in the island of Mauritius is of the same species with that which Thunberg observed in Japan^d: where it is called *Abrasin*.]

DRYAS. (So called by Linneus, from the *Dryades* or Nymphs of the oaks; the leaves bearing some resemblance to those of the oak.)

[*Lin. gen. n.* 637. *Reich.* 693. *Schreb.* 868.

Gærtn. 74. *Juss.* 338.

Class. 12. 5. Icosandria Polygynia.

Nat. order of *Senticosæ*.—*Rosacæ.* *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, eight-parted: divisions spreading, linear, obtuse, equal, a little shorter than the corolla.

COR. *Petals* eight, oblong, emarginate, spreading, inserted into the calyx.

STAM. *Filaments* numerous, capillary, short, inserted into the calyx. *Anthers* small.

PIST. *Germes* many, crowded, small. *Styles* capillary, inserted into the side of the germ. *Stigmas* simple.

PER. none.

SEEDS numerous, roundish, compressed, furnished with extremely long woolly styles.

OBS. *The calyx varies in divisions from six to ten, with as many petals as there are divisions in the calyx.* S.

ESSENTIAL CHARACTER.

Cal. five to ten-cleft (six to ten-cleft. S. eight or ten-cleft. G.) Pet. five to eight. Seeds tailed, hairy.

SPECIES.

1. *Dryas anemonoides*.

Lin. syst. 480. *Pallas it.* 3. 733. t. Ec. f. 4.

D. pentapetala. *Lin. spec.* 717. *amæn.* 2. 353.

Reich. 2. 553. *Gmel. sib.* 3. 187. n. 43.

Anemone pusilla. *Comm. nov. petrop.* 14. 1. 543.

t. 19. f. 2, 3.

Caryophyllata pentaphyllea. *Baub. hist.* 2. 398.

Raii syn. 254. *hist.* 608. 10. *Park. theat.* 137.

C. alpina quinquefolia. *Baub. pin.* 322. *Ger.* 843.

emac. 995. 3.

Five-petalled; leaves pinnate, with all the pinnae distinct.

^b Thunberg.

^c Jussieu.

^d Kämpf. *ic. select.* p. 2.

2. *Dryas octopetala*.

Lin. spec. 717. *syst.* 481. *Reich.* 2. 553. *fl. lap.*

n. 215. *suec. n.* 462. *hort. cliff.* 195. *Huds.*

angl. 226. *With.* 539. *Penn. hebr.* 33. p. 285.

Lightf. scot. 274. *Hall. helv. n.* 1133. *Scop.*

carn. n. 631. *Segu. veron.* 512. *Gmel. sib.*

3. 188. *Fl. dan. t.* 31. *Pallas. it.* 3. 733.

Gærtn. fruct. 352. *Villars dauph.* 3. 580.

Caryophyllata alpina chamædryos folio. *Mor. hist.*

2. 432. f. 4. t. 26. f. 9. *Raii syn.* 253. *hist.*

688. 11.

Chamædryos 3. f. *montana.* *Clus. hist.* 2. 351. 2.

pann. 611.

Ch. alpina cisti flore. *Baub. pin.* 248.

Ch. spuria montana cisti fl. *Park. theat.* 106. 1.

Ch. montana durior. *Lob. ic.* 495. 1, 2.

Teucrium alpinum cisti fl. *Ger.* 533. 4. *emac.*

659. 6.

Eight-petalled; leaves simple.

DESCRIPTIONS, &c.

1. This is a very small plant, native of Siberia; the radical leaves are commonly ternate, compound, consisting of a middle leaflet longer than the rest, and two lateral ones: all the leaflets are deeply cut or divided, but vary much in different individual plants as to breadth and length; sometimes the leaves have more than three divisions; they are of a bright green, and very smooth; the foot-stalk is round: the stalk is terminated by a single flower, which is large in proportion: the calyx is outwardly green, and inwardly lanuginous, and of a silvery appearance: the corolla is pale yellow, the petals striated: the stamens are extremely numerous, and short; the germs converge into a globe, and are coated with a white down.

2. This delicate ever-green plant, with its snow-white blossoms, is a great ornament to alpine heights^b. The stalk and branches are woody and perennial, lying flat upon the ground, and spreading wide about the root in tufts^c. Leaves ever-green, ovate, turned back at the edge, ending very obtusely, and sometimes emarginate, deeply and bluntly serrate, or more properly crenate, hard and stiff, of a dark green, wrinkled surface on the upper side, and hoary underneath, having woolly foot-stalks, and a large halbert-shaped stipule to each, embracing the stem. Peduncles naked, downy, scattered with purple hairy glands, each bearing one flower^d, an inch in diameter^e; consisting generally of eight petals, but sometimes of ten or six, seldom of five^f. Seeds oblong, gibbous on one side, straightish on the other, somewhat villose, reddish brown, narrowing at bottom, ending at top in a feathered flexile tail, eight times the length of the seed^g. The corolla is frequently double. The structure of the stipules renders this genus the connecting link between *Rosa* and the rest of the *Senticosæ*^h.

Monf. Villars says, it has the leaves of *Germanander*, the petals and fruit of *Anemone*, the calyx and stamens of *Geum*, with which genus it might be united. It forms large tufts like *Arbutus alpina*, but the leaves are crenate and smaller, and the flowers are very different.

Native of high mountains in Lapland, Denmark, Switzerland, where Ray observed it on Thuri, one of the highest points of mount Jura; the Grisons, Savoy, Austria, Carniola, Stiria, Carinthia, Germany, France, Italy, Siberia, Ireland, Scotland, and the north of England. As between Gort and Galloway, where it was found by Mr. Heaton, and near Sligo in Ireland. Breadalbane, Isle of Skye; Ross-shire; Sutherland, and Argyleshire, in Scotland. Arncliffe Clowder in Littendale, near Kilnsay; and near Settle, in Yorkshire. It flowers in June. No cattle eat itⁱ.

Dryas pentapetala, mentioned by Sibbald as growing in the den of Bethaick, four miles from

^b Linn. suec.

^c Linn. suec. Lightf. Woodw. Mff.

^d Crantz.

^e Gærtner.

^f Withering.

^g Lightfoot.

^h Scopoli.

ⁱ Stokes in With.

Perth, is not now to be found there; possibly the *Potentilla argentea* was mistaken for it^k.
 DRYAS GEOIDES. See *Geum potentilloides*.
 DRYOPTERIS. See *Asplenium* and *Polypodium*.
 DRYPIS. (*Δρυπίς* of Theophrastus; a prickly shrub: *απο του δρυπίου, from its prickly tearing quality.*)
Lin. gen. n. 381. Reich. 412. Schreb. 519. Gært. t. 128. Mich. 23. Mygind. Jacq. vind. 304. Juss. 303.
 Class. 5. 3. Pentandria Trigynia.
 Nat. order of *Caryophyllei*.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, tubular, half-five-cleft, permanent.
 COR. *Petals* five. *Claws* length of the calyx, narrow. *Border* flat: plates two-parted: *divisions* linear, obtuse: *Throat* crowned with the two toothlets of each petal.
 STAM. *Filaments* five, length of the corolla. *Anthers* simple, oblong, incumbent.
 PIST. *Germ* obovate, compressed. *Styles* three, simple, patulous; *Stigmas* simple.
 PER. *Capsule* roundish, covered by the calyx, one-celled, small, clipped round.
 SEED single, kidney-form, glossy.

ESSENTIAL CHARACTER.

Cal. five-toothed. *Pet.* five. *Caps.* clipped round, one-seeded.

SPECIES.

1. *Drypis spinosa*.
Lin. spec. 390. syst. 298. Reich. 1. 747. mant. 359. Gært. fruct. 2. 218. Jacq. hort. 1. 19. t. 49. vind. 304. Scop. carn. n. 377. Mich. gen. 24. t. 23. Dalech. hist. 1480. Lob. ic. 789. Tabern. ic. 144. Ger. emac. 1112. Mor. hist. 3. 161. f. 7. t. 32. f. 8. (Carduus.) Park. theat. 982. f. 7.
Spina umbella foliis vidua. Baub. pin. 388.

DESCRIPTION, &c.

The first stems are procumbent, four-cornered, brachiate; the last dichotomous and flower-bearing. Fresh green branches push forth in the spring from the dry ones of the former year, the extreme ones are dichotomous, and bear flowers. Leaves subulate, somewhat three-cornered, mucronate; those at the subdivisions of the stem are lanceolate, with three teeth on each side. Peduncles shorter than the flower. Calyx erect: corolla crowned, as in *Silene*, purple or white; petals very narrow, spreading: stamens erect. Biennial^l.—Native of Barbary, Italy, Istria.

This plant in its adult state becomes shrubby. Branches very frequent, patulous. Upper leaves flat, convex underneath, under the topmost branches below the middle on both sides putting forth spiny teeth on the edge. Petals red. Capsule so covered with the converging hardened calyx, that they should fall together, without the capsules opening: it is not therefore five-valved, as Micheli asserts it to be; nor is it *circumscissa*, as Linneus^m.

The fruit is thus described by the accurate Gærtner. It is a capsule covered by the calyx, ovate, mucronate at top, slightly narrowed at bottom, membranaceous, very thin, diaphanous, one-celled, clipped round above the middle. The seed is fastened by a filiform umbilical chord, ascending from the bottom of the capsule to the emarginate side of the seed: it is single, the same size with the capsule, kidney-form, beaked, keeled on the back with a prominent line, compressed, lens-shaped, smooth, somewhat shining, fulvous, or bay yellow.

Introduced 1775, by Jos. Nich. de Jacquinⁿ. It is named *Sperage Thistle* by Johnson in Gerarde. In Italy they call it *Erba Ciuccia*, or *Afs herb*, because that animal feeds freely on it.

DRYPIS. See *Cucubalus* and *Salvola*.

DUCK'S-FOOT. See *Podophyllum*.

DUCK'S-MEAT. See *Lemna*.

DUDAİM. See *Cucumis*.

^k Lightfoot.

^m Scopoli.

^l Linn. spec. syst. & mant.

ⁿ Hort. kew.

DUGLASSIA. See *Douglassia* and *Volkameria*.

DULCAMARA. See *Solanum*.

DULCIS RADIX. See *Glycyrrhiza*.

DUNG. See *Manure*.]

DURANTA. (So named by Linnæus in memory of Castor Durantes, physician to Pope Sixtus V. He published Herbarium, 1584. Plumier named the genus *Castorea*.)

Lin. gen. n. 786. Reich. 849. Schreb. 1052.

Castorea. Plum. 17. Gært. 57. Juss. 109.

Ellisia Brown. 29. f. 11. Loeß. it. 174.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatæ*.—*Vitices*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, tubular, somewhat truncated, five-cleft.
 COR. one-petalled. *Tube* longer than the calyx, somewhat curved. *Border* patulous, five-parted, nearly equal, rounded.
 STAM. *Filaments* four, the two longer ones within the tube. *Anthers* roundish.
 PIST. *Germ* inferior, roundish. *Style* filiform, length of the stamens. *Stigma* thickish.
 PER. *Berry* roundish, covered by the calyx.
 SEED. *Kernels* four, two-celled.

ESSENTIAL CHARACTER.

Cal. five-cleft, superior. *Berry* four-seeded. *Seeds* two-celled. (*Cal.* five-toothed. *Cor.* funnel-shaped, five-cleft. *Berry* one-celled, containing four two-celled stones. G.)

SPECIES.

1. *Duranta Plumieri. Smooth Duranta*.
Lin. spec. 888. syst. 577. Reich. 3. 195. Jacq. amer. 186. t. 176. f. 76. pict. 92. t. 261. f. 53. Gært. fruct. 272.
D. spinosa. Lin. spec. edit. 1. 637.
Castorea repens spinosa. Plum. ic. t. 79.
β. D. inermis. Lin. spec. ed. 1. 637.
D. racemosa. Mill. dict. n. 2.
C. racemosa, fl. cæruleo, fr. croceo. Plum. ic. t. 79.
Fruiting calyxes twisted.
2. *Duranta Ellisia*.
Lin. spec. 888. syst. 577. Reich. 3. 195. Jacq. amer. 187. t. 176. f. 77. pict. 92. t. 179. hort. 3. t. 99. Swartz obs. 247.
Ellisia acuta. Lin. amæn. 5. 400. Loeß. itin. 194. Brown. jam. 262. t. 29. f. 1. Mill. dict. edit. 7. add. Sloan. jam. 297. (Jasminum.)
Fruiting calyxes erect.
- [3. *Duranta Mutisii*.
Lin. syst. 577. suppl. 291.
Leaves elliptic, quite entire.

DESCRIPTIONS, &c.

These are shrubs with quadrangular branches. The flowers are in loose spikes either from the axils, or at the ends of the branches. They have generally axillary spines; and they are so alike in their manner of flowering, as well as in the structure and colour of the flower, that it is doubtful whether they may not be all one species^o.

1. This grows fifteen feet high, with alternate branches, erect or reclining. Spines awl-shaped, opposite, but very frequently wanting. Leaves lanceolate, on short petioles, acute, bluntly and unequally serrate above the middle, smooth, opposite, two inches long. Racemes loose, wide, reclining, both axillary and terminating. Flowers slightly sweet-smelling, very many, blue, on very short peduncles. Fruit yellow; the calyx also then becoming yellow, and like a berry, the whole being changed, and different from its former shape^p.

Gærtner thus describes the fruit. It is a succulent Berry, involved in the calyx, ovate-globular, red or saffron-coloured, one-celled, with four hard, three-sided stones, bowed on the back, and two-celled. Calyx when ripe bellying, marked with four deeper-coloured fillets, and four others that are pale and diaphanous; it is contracted above, and five-toothed; with awl-shaped teeth twisted towards

^o Jussieu & Linn. suppl.

^p Jacquin.

the right hand. There is a single seed in each cell, of the same shape with it, rufescent, fixed by its base.

Linneus originally made two species of this, and Miller continues them distinct; adding a third, under the name of *Durantia erecta*, which is probably our second species *D. Ellisia*. He thus describes them.] 1. Has many trailing branches, armed with hooked thorns at every joint, and having oblong leaves, placed without order, and slightly ferrate. Flowers from the side of the stalks in pretty long bunches, like those of the common Currant; they are of a pale blueish colour, and are succeeded by brown berries, not unlike those of the Hawthorn; having one cell, and inclosing four angular seeds. 2. (*1 β inermis*.) Has a branching woody stalk, seven or eight feet high. Leaves ovate-lanceolate, three inches long, and an inch and half broad in the middle, ferrate, of a lucid green colour, and opposite. Flowers in long, terminating bunches; they are blue, and are succeeded by pretty large, round, yellow berries, containing four angular seeds. 3. Rises with a strong, upright, woody stem, to the height of ten or twelve feet, covered with a white bark, dividing into many branches, armed with sharp thorns. Leaves ovate, stiff, an inch long, and three quarters of an inch broad, quite entire. Flowers in long terminating bunches; they are blue, and are succeeded by small round yellow berries, containing four angular seeds.

[Native of South America, and the West-India islands.

Introduced before 1733 by William Houstoun, M.D.^a

2. This shrub is a fathom in height or more, branched and even. Branches long, reclining, quadrangular, subdivided, with axillary, opposite, awl-shaped spines, which however are sometimes wanting. Leaves petioled, opposite, ovate-lanceolate, acuminate, ferrate, nerved, smooth on both sides. Racemes compound, terminating, brachiate, many-flowered. Flowers on short peduncles, and blue.

The specific character of this and the preceding, taken from the contortion of the calyx above the fruit, is vague and insufficient; since the differences occur frequently in the same raceme. They are therefore in all probability not specifically distinct. Jacquin also remarks, that it is extremely like the first species, except that the fruiting calyx is not twisted in the upper part, but continues convergent and erect.

Notwithstanding this approximation, Dr. Patrick Browne made it a distinct genus under the name *Ellisia*, from Mr. Ellis the ingenious author of a treatise on Zoophytes, or plant-like marine productions of an animal nature. He says that this shrub rises frequently to the height of six or seven feet; that the leaves are very like those of green Tea; and that the branches, though sometimes beset with thorns, are often otherwise.—Native of the West-Indies. In Jamaica frequent in hedges, between Kingston and San Jago de la Vega.

Cultivated in 1739, by Mr. Miller.

3. This differs no otherwise from the two other species than in the leaves. Native of South America, and found there by Mutis.^b]

PROPAGATION AND CULTURE.

These plants being natives of warm countries, they require a stove to preserve them in England; they are propagated by seeds, which should be sown in small pots, and plunged into a hot-bed of tanner's bark; and when the plants are fit to remove, they must be planted each into a separate small pot filled with light earth, and plunged into the hot-bed again, observing to shade them till they have taken new root, then they must be treated in the same manner as other plants from the same country.

^a Hort. kew. from Mill. dist. Castorea 1.
^b Linn. suppl.

^c Swartz.

The second sort (*1 β*) may be propagated by cuttings, which may be planted in any of the summer months; but these should be plunged into a moderate hot-bed, and shaded from the sun till they have taken root, then they may be treated in the same manner as the seedling plants. This being not so tender as the other two, may be placed in the open air in summer; and if kept in a moderate temperature of warmth in the winter, will thrive better than in great heat. I kept some of the plants of this sort three winters, in a dry warm glass case without fires, and they succeeded pretty well; but the winter of 1762 proving severe, their leaves fell; they put out again, however, very well.

[These, whether they be species or varieties, may also certainly be increased by cuttings, which put out roots very readily.] They thrive best during winter in a temperate heat; for when they are too tenderly treated, their shoots are apt to be weak, and then they are attacked by vermin. In summer, place them in a warm sheltered situation in the open air.^c

[DURIO.

Lin. gen. Schreb. 1221. Reich. n. 977. Juss.

244. Rumph. amb. 1. p. 99.

Class. 18. 4. Polyadelphia Polyandria.

Nat. order of Putamineæ.—Capparides, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, pitcher-shaped, five-lobed; lobes rounded; deciduous.

COR. Petals five, added to the calyx, and less than it, concave.

STAM. Filaments in five bodies, divided into seven, subulate, longer than the corolla. Anthers twisted. (Or, according to Jussieu, filaments five, flat at the base, seven or eight-cleft at the top, the divisions connate, subulate, bearing thirty-five to forty twisted anthers.

PIST. Germ roundish, stipitate; Style bristle-form, length of the stamens. Stigma

PER. Pome roundish, on all parts mucronated with many-sided dagger points, five-celled, gaping open in five directions; cells one to five-seeded.

SEEDS large, ovate, involved in a mucose pulp, in a membranaceous aril. *ŷ*.

OBS. The character of the genus is to be amended by eye-witnesses.

ESSENTIAL CHARACTER.

Cal. five-cleft, pitcher-shaped, inferior. Cor. five-petalled, small. Style one. Stam. in five bodies. Pome five-celled.

SPECIES.

1. Durio Zibethinus.

Lin. syst. 698. Reich. 3. 587. Rumph. amb.

1. 99. t. 29.

DESCRIPTION, &c.

A lofty tree with flowers below the leaves, which are alternate. Native of the East-Indies.^a

The leaves resemble those of the cherry, but are not dented at the edges, and are therefore in reality more like nutmeg-leaves. The flowers are borne in loose heads. They are large, and of a pale yellow-white colour. The fruit is the size of a man's head, and round or oblong; resembling in some degree a rolled-up hedge-hog, with a hard bark or rind; the fleshy part of the fruit is of a creamy substance, and of a delicate taste; but of an unpleasant heavy smell, somewhat resembling that of rotten onions; and the smell of the breath of those who eat it is infected also in a high degree; but when once a person has accustomed himself to eat this fruit, he generally considers it as the most excellent of all others.^b

DUROIA. (So named in memory of Jo. Phil. Du Roi, a physician at Brunswick, author of *Observationes Botanicae*, and *Hortus Harbecensis*.)

Lin. suppl. 30. n. 1384. Schreb. gen. n. 592.

Juss. 203.

Pubeta. Amæn. acad. 8. 264.

Class. 6. 1. Hexandria Monogynia.

Nat. order of Rubiaceæ. Juss.

^a Miller edit. 7. add. Ellisia.

^b Linn. syst.

^c Rumphius.

GENERIC CHARACTER.

- CAL. *Perianth* one-leaved, cylindric, truncate, contracted, very short, superior.
- COR. monopetalous: *tube* cylindric: *border* length of the tube, six-parted; *divisions* ovate, spreading.
- STAM. *Filaments* none: *anthers* six, oblong, within the tube.
- PIST. *Germ* inferior: *style* filiform, the length of the tube: *stigmas* two.
- PÉR. *Pome* globular, umbilicate, covered with erect hairs.
- SEEDS very many, nestling, oval, flat, very smooth, incumbent, in a double row.
- OBS. *The flowers are frequently abortive; nay, there are some genuine male flowers without any germ. It should therefore be referred rather to the class Polygamia.*

ESSENTIAL CHARACTER.

CAL. cylindric, truncate. COR. six-parted. Filaments none. Pome hispid.

SPECIES.

1. *Duroia Eriopila.*

Lin. syst. 342. *suppl.* 209. *Merian. surin.* t. 43?
DESCRIPTION, &c.

A tree with thick, unequal branches, hirsute at the end. Leaves terminating, opposite, approximating, many, subpetioled, a span in length, obovate, quite entire, obtusish, ribbed, pubescent above, ~~noted~~ underneath. Petioles very short, hirsute. Flowers at the ends of the branches, sessile, heaped, many, several of them abortive. Corollas white, like those of *Nyctanthes Sambac*. Fruit somewhat larger than a turkey's egg, spherical, covered very thick with erect, brown hairs; umbilicate, with the hollow calyx. It is well flavoured, and much esteemed at Surinam, of which it is a native².

DWALE. See *Atrapa*.]

DWARF-TREES. These were formerly in much greater request than they are at present; for though they have many advantages to recommend them, yet the disadvantages attending them greatly overbalance; and since the introducing of espaliers, into the English gardens, Dwarf-trees have been in little esteem for the following reasons;

1st, The figure of a Dwarf-tree is very often so much studied, that, in order to render the shape beautiful, little care is taken to procure fruit, which is the principal design in planting these trees.

2dly, The branches being spread horizontally near the surface of the ground, render it very difficult to dig or clean the ground under them.

3dly, Their taking up too much room in a garden, especially when they are grown to a considerable size, so that nothing can be sown or planted between them.

4thly, These trees spreading their branches near the ground, continually shade the surface of the earth; so that neither the sun nor air can pass freely round their roots and stems, to dissipate noxious vapours, whereby the circumambient air will be continually replete with crude rancid vapours, which, being drawn in by the fruit and leaves, will render its juices crude and unwholesome, as well as ill tasted.

It is also very difficult, to get to the middle of these Dwarf-trees in the summer, when their leaves and fruit are on the branches, without beating off some of the fruit, and breaking the young shoots; whereas, the trees on an espalier can at all times be come at on each side, to tie up the new shoots, or to displace all vigorous ones, which, if left on, would rob the trees of their nourishment.

Add to this, the fruit-buds of all sorts of Pears and Apples, and most sorts of Plumbs and Cherries, are first produced at the end of the former year's shoot, which must be shortened in order to keep the Dwarfs to their proper figure, so that the fruit-buds are cut off, and a greater number of branches are obtained; than can be permitted to stand; so that all those sorts of fruit-trees, whose branches

require to be trained at their full length, are very improper to train up as Dwarfs; and the Peaches and Nectarines which will bear amputation, are too tender to be trained so in this country.

These evils being entirely remedied by training the trees to an espalier, has justly gained them the preference; however, if any one has a mind to have Dwarf-trees, notwithstanding what has been said, I shall lay down a few rules for their management.

If you design to have Dwarf Pear-trees, you should bud or graft them on Quince stocks; but as many sorts of Pears will not thrive if they are immediately budded or grafted on Quince stocks, so some of those sorts which will take freely, should be first budded on the Quince stocks; and when these have shot, the sorts you intend to cultivate, should be budded into these; for free stocks are apt to make them shoot so vigorously, as not to be kept within bounds. These grafts or buds should be put in about four or six inches above the surface of the ground, that the heads of the trees may not be advanced too high; and when the bud or graft has put out four shoots, you should stop the end of the shoots, to force out lateral branches.

Two years after budding, these trees will be fit to transplant where they are to remain; for though many people chuse to plant trees of a greater age, yet they seldom succeed so well as young ones. The distance these trees should be planted is twenty-five or thirty feet asunder, for less will not do if the trees thrive well. The ground between them may be cultivated for kitchen-garden herbs while the trees are young, but you should not sow or plant too near their roots.

In order to train your trees regularly, you should drive stakes into the ground round the tree, to which the branches should be fastened down with liff in a horizontal position; for if they are suffered to grow perpendicularly while young, they cannot be afterwards reduced without great violence to any tolerable figure. The necessary directions to be afterwards followed are, not to suffer any branches to cross each other; and always in shortening any shoots be sure to leave the uppermost eye outwards, whereby the hollowness in the middle of the tree will be better preserved; and be careful to rub off all perpendicular shoots in the middle of the trees, as soon as they are produced. The other necessary rules you will find under the article of PRUNING.

The sorts of Pears which do best in Dwarfs, are all summer and autumn fruits; for winter Pears are not worth planting in Dwarfs, they seldom bearing well, nor are ever well tasted, and commonly are very stony, because they are commonly grafted on Quince stocks.

Apples are also planted in Dwarfs, most of which are now budded or grafted on Paradise stocks; but as these are for the most part of a short duration, they are not profitable, and are fit only for small gardens as a matter of curiosity, producing fruit sooner, and in greater plenty, than when they are upon Crab or Apple stocks.

The distance these trees should be planted, if on Paradise stocks, should be six or eight feet, and upon Dutch stocks eighteen or twenty; but if on Crab stocks, twenty-five or thirty feet asunder each way. The management of these being the same with Pears, I need not repeat it.

Some persons also plant Apricots and Plumbs for Dwarfs, but these seldom succeed well, as being of a tender constitution; and those which will produce fruit on Dwarfs, are much more likely to do so when trained on an espalier, where they can be much better managed; and therefore I judge it much the better method, as being more certain, and the trees will make a better appearance.

[DYER'S WEED. See *Genista* and *Reseda*.

E.

EARTH NUT. See *Arachis* and *Bunium*.

EARTH PEA. See *Lathyrus*.

EARWORT. See *Hedysotis*.

EBENASTER & EBENUM. See *Diospyros*.]

EBENUS. (Ἐβένος or ἑβένος of the Greeks; Ebenus or Ebum of the Romans. From the Hebrew Heben.)

Lin. gen. n. 895. Reich. 938. Schreb. 1175.

Class. 17. 4. Diadelphia Decandria.

GENERIC CHARACTER.

CAL. Perianth one-leaved, bell-shaped, terminated by five filiform teeth, which are villose, and nearly equal.

COR. papilionaceous, length of the calyx.

Standard roundish, straight, entire. Rudiments of wings obscure, crescent-shaped.

Keel crescent-shaped, gibbous, ascending at the tip.

STAM. Filaments diadelphous, all growing together into a sheath, with tips distinct. Anthers roundish.

PIST. Germ roundish, villose. Style capillary. Stigma terminal, acuminate.

PER. Legume ovate.

SEED single, rough with hairs.

ESSENTIAL CHARACTER.

Cal. with teeth, the length of the corolla. Wings scarcely any. Seed one, rough with hairs.

SPECIES.

1. *Ebenus cretica*. *Cretan Ebony*.

Lin. spec. 1076. Reich. 3. 438. mant. 451.

Alp. exot. 279. t. 228. Pona ital. 128. Barr.

ic. t. 377 & 913. (Barba Jovis.) Pluk. alm.

t. 67. f. 5. (Loto affinis).

Cytisus incanus creticus. Bauh. pin. 390.

Leaves ternate, quinate or pinnate, with two pairs of leaflets, spikes terminating.

[2. *Ebenus pinnata*. *Pinnated Ebony*.

Ait. hort. kew. 3. 27. L'Herit. stirp. nov. 2.

t. 38.

Leaves pinnate, with four pairs of leaflets, spikes axillary, on very long peduncles.

DESCRIPTIONS, &c.

1. This rises with a shrubby stalk three or four feet high, with several side branches. Leaves at each joint, hoary, composed of five narrow lanceolate leaflets, which join at their tails to the foot-stalk, and spread out like the fingers of a hand. The branches are terminated by thick spikes of large purple flowers: the spikes are from two to three inches long, and make a fine appearance. It flowers in June and July, and in very warm seasons will sometimes perfect seeds in England. It grows naturally in Crete, and some islands of the Archipelago.

[Lamarck and Jussieu refer this plant to the genus *Anthyllis*. Linneus observes that the bractes are ovate, acute and scarious. Calyxes sessile, with setaceous villose teeth, the length of the flowers^a. It was cultivated in 1748 by Mr. Miller^b.

2. Biennial. Native of Barbary and the Levant. Introduced in 1786, by Mons. Thouin. It flowers in July^c.]

PROPAGATION AND CULTURE.

These are propagated by seeds, which should be sown in the autumn, for those which are sown in the spring often fail; they must be sown in pots, and placed under a frame in the winter, where they may be protected from frost. In the spring the plants will come up, they should be kept clean from weeds, and refreshed now and then with water. When these have acquired strength enough to be removed, they should be each planted in a separate small pot filled with light earth, and plunged into a moderate hot-bed just to promote their taking new root; then they should be gradually inured to bear the open air, into which they should be removed the latter end of May, placing them in a sheltered situa-

tion, where they may remain till autumn, when they must be removed into shelter; for these plants will not live in the open air through the winter, nor should they be too tenderly treated, lest they draw up weak. I have found them succeed best when placed in an airy glass case without fire in winter, where they will have more sun and air than in a green-house. During the winter season, the plants must be sparingly watered, but in the summer they will require to be often refreshed. The other management is the same as for other of the hardier exotic plants, among which they will make a fine variety.

[EBENUS, & EBONY. See *Amerimum* and *Diospyros*.]

EBULUS. See *Sambucus*.

[ECASTAPHYLLUM. See *Dalbergia*.

ECBOLIUM. See *Justicia*.]

ECHINOMELOCACTUS. See *Cactus*.

ECHINOPHORA. (From *Εχινος*, a Hedge-hog, and *φορος*, to bear. On account of the prickliness of its fruit.)

Lin. gen. n. 329. Reich. 359. Schreb. 464.

Mant. 217? Tourn. 423. Juss. 225.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Umbellatae*, or *Umbelliferae*.

GENERIC CHARACTER.

CAL. Umbel universal with very many rays; the intermediate ones shorter. Partial with very many sessile flowers: the central one sessile; receiving the germs between the pedicels.

Involucre universal with some sharp rays. Partial turbinate, one-leaved, six-cleft, acute, unequal.

Perianth proper five-toothed, permanent, very small.

COR. Universal difform, rayed, floscules male, abortive; the central one of the umbel female.

Proper five-petalled: Petals unequal, patulous.

STAM. Filaments five, simple; Anthers roundish.

PIST. Germ oblong, inferior, cloathed with an involucre. Styles two, simple. Stigmas simple.

PER. none, in place of which is a hardened, mucronate involucre.

SEED single, ovate-oblong.

ESSENTIAL CHARACTER.

Lateral flowers male; central hermaphrodite. Seed one, immersed in an involucre.

SPECIES.

1. *Echinophora spinosa*. *Prickly Sea-Parsnep*.

Lin. spec. 344. Reich. 1. 660. Turr. farset. 7.

Huds. angl. 112. With. 268.

Crithmum maritimum spinosum. Bauh. pin. 288.

Park. theat. 1286.

C. spinosum. Dod. pempt. 705. Ger. 417. f. 2.

emac. 533. 2. Raii hist. 469.

Leaflets subulate-spiny, quite entire.

2. *Echinophora tenuifolia*. *Fine-leaved Sea-Parsnep*.

Lin. spec. 344. Reich. 1. 660.

Pastinaca sylvestris angustifolia, fructu echinato.

Bauh. pin. 151.

P. echinophora apula. Column. ecphr. 1. 98. t. 101.

Park. theat. 901. 1684. Raii hist. 469.

Leaflets gashed, unarmed.

DESCRIPTIONS, &c.

1. Root perennial, creeping. Stalks branching, five or six inches high, with short thick leaves, terminating in two or three sharp thorns, and opposite, in pairs. Flowers in an umbel, on a naked peduncle, which arises from the side of the stalk. Under the umbel an involucre composed of several leaves, terminating in sharp spines. Corolla white. It flowers in June.

Native of the sea coast of Europe, especially in the Mediterranean sea.

[It was found by Mr. Ray on the sea coast of Lancashire, and by Mr. Blackstone between Fever-sham and Sea Salter. In the former in these places it has lately been searched for without success^d.]

2. Root perennial. Stalk near a foot and half high; whence come out two opposite side branches at every joint. At the lower part of it are leaves finely divided, like those of the Carrot. The flowers

^a Mant.

Hort. kew.

^c Ibid.

^d Withering.

grow in small umbels at the extremities of the branches, having a short prickly involucre. It flowers in July. [Native of the sea-coast of Apulia. They were both cultivated by Mr. Miller before 1759.]

PROPAGATION AND CULTURE.

These plants not producing seeds here, are increased by their creeping roots. Transplant them the beginning of March, a little before they shoot. Place them in a warm situation, and a dry soil; or else cover them in winter to prevent the frost from destroying them.

[ECHINOPHORA. See *Caulalis*, *Daucus*, *Osbeckia*.

Echinophoræ affinis. See *Elephantopus*.]

ECHINOPS. (From *ἔχινος*, a Hedge-hog, and *ὤψις* facies, appearance; on account of the roughness of these plants.)

Lin. gen. n. 999. Reich. 1084. Schreb. 1353. Juss.

175. Gært. t. 160. *Echinopus* Tourn. 262.

Vaill. A. G. 1718. f. 4. 5. 15.

Class. 19. 5. Syngenesia Polygamia Segregata.

Nat. order of *Compositæ Capitatæ*.—*Cinarocephalæ*.

Juss.

GENERIC CHARACTER.

CAL. Common many-leaved: with scales subulate, totally reflected, containing many flowers.

Perianth partial one-flowered, oblong, imbricate, cornered: leaflets subulate, loose above, upright, permanent.

COR. one-petalled, length of the calyx, tubular: border five-cleft, reflex-spreading.

STAM. Filaments five, capillary, very short. Anthers cylindric, tubular, five-toothed.

PIST. Germ oblong. Style filiform, length of the corolla. Stigma double, somewhat depressed, rolled back.

PER. none. Calyx unchanged, larger.

SEED. single, ovate-oblong, narrower at the base: with obtuse tip. Down obscure.

REC. Common-globose, bristly.

ESSENTIAL CHARACTER.

Cal. one-flowered. Cor. tubular, hermaphrodite.

Recept. bristly. Down obscure.

SPECIES.

1. *Echinops sphærocephalus*. Great Globe Thistle.

Lin. spec. 1314. Reich. 3. 945. hort. cliff. 391. 1.

Hall. helv. n. 158. Scop. carn. n. 993. Gouan.

illustr. 74. Mill. illustr. Gært. fruct. 2. 385.

Villars dauph. 3. 264.

2. *Echinops major*. Baub. hist. 3. 69.

Carduus sphærocephalus latifolius vulgaris. Baub.

pin. 381. Best. syst. est. 11. t. 7. f. 1. Raii hist.

383.—globofus. Ger. 990. emac. 1151. 1.

C. sph. acutus major. Park. theat. 977. 2.

Chalcepos. Dalech. hist. 1480.

Chamæleon verus. Trag. hist. 853.

Heads globular, leaves sinuate, pubescent.

3. *Echinops spinosus*. Thorny-headed Globe Thistle.

Lin. syst. 797. Reich. 3. 946. mant. 119. Turr.

fars. 13.

Carduus sphærocephalus capitulo longis spinis ar-

mato. Baub. pin. 382. Raii hist. 383.

C. sph. acutus. Dod. pempt. 722. Ger. emac. 1151.

f. 2.—minor. Park. theat. 977. f. 1.

Heads interspersed with long spines.]

4. *Echinops Ritro*. Small Globe Thistle.

Lin. spec. 1314. Reich. 3. 946. hort. ups. 248.

Scop. carn. n. 994. Gouan. illustr. 74. Gmel.

fib. 2. 100. n. 82. Mill. fig. t. 130. Villars

dauph. 3. 265.

5. *Carduus sphærocephalus cæruleus minor*. Baub.

pin. 381. Raii hist. 383.

Ritro flor. cæruleis. Lob. ic. 2. 8. 1.

6. *Crocodylium monspeliensium*. Dalech. hist. 1476.

β. E. caule subunifloro, fol. duplicato-pinnatifidis,

foliolis linearibus remotis. Gmel. fib. 2. 102.

t. 46.

E. minor. Baub. hist. 3. 72.

C. sphærocephalus minor. Park. parad. 331. f. 6.

Head globular, leaves pinnatifid, smooth above.

7. *Echinops strigosus*. Annual Globe Thistle.

Lin. spec. 1315. Reich. 3. 947. Loebl. hisp. 159.

Carduus tomentosus, capitulo majore. Baub. pin.

382.

Scabiosa carduifolia annua. Herm. par. t. 224.

Spina alba. Lob. ic. 2. 9.

Heads in bundles, lateral calyxes barren, leaves strigose above.

5. *Echinops græcus*.

Mill. dist. n. 4.

Echinops græcus, tenuissime divisus & lanuginosus, capite minori cæruleo. Tournes. cor. 34.

Stem one-headed, leaves spiny, all pinnatifid and villose, root creeping.

DESCRIPTIONS, &c.

[These are herbaceous plants, some of them large and lofty. The leaves are alternate, thorny and pinnatifid. The heads of flowers are usually solitary at the end of the stem and branches.]

1. Root perennial. Stalks many, four or five feet high. Leaves long and jagged, divided into many segments almost to the midrib, the jags ending in spines; they are of a dark green on their upper side, but woolly on their under. There are several globular heads of flowers on each stalk. The florets are commonly blue, but sometimes white. These come out in July, and the seeds ripen in August.

[Linneus observes, that the stem is branched, many-flowered, pubescent, with spreading villose hairs. Leaves hairy on the upper surface. All the scales of the calyx pubescent to the very tip^a.—Usually quite smooth, according to Gouan. In its wild state it is only a cubit and half in height; in the garden it is much higher, less hoary, but more hirsute. The outer calyxes are probably barren^b. The common receptacle is spherical, papillose or warted, and naked; proper none except the bottom of the calyx. Seed acuminate at the base, having small whitish bristles scattered over it, and pressed close to it, of a brown bay colour. It has no crown, but a little membranaceous crenulate cup, probably the remains of the fallen corolla^c.

Native of France, Spain, Italy, the Valais, Austria, Carniola, Germany.

Cultivated in 1596, by Gerarde^d.

2. This is of the same stature with the foregoing, but the stem and leaves are more tender. Stem (in the green-house) becoming somewhat shrubby, without glandular hairs. The heads are like those of the first species, but the florets are white, and larger, with the jags reflex-hooked. Among the florets every where come out spines formed of unexpanded calyxes, four times the length of the florets, which at length are cloven in two. Native of Egypt and Arabia. Perennial^e.]

3. This has a perennial creeping root, sending up several strong stalks two feet high, and branching. Leaves cut into many fine segments to the midrib. Each branch is terminated by a globular head of flowers, smaller than those of the first, and of a deeper blue, but sometimes white: they come out in July.

[Linneus observes, that the stem is white-tomentose. Leaves smooth above, white-tomentose underneath. Scales of the calyx ciliate to the very tip^f. Stem, according to Gouan, a foot in height. All the leaves pinnatifid, pinnules narrow, gashed, the ends only of the segments prickly: on the stem and branches less gashed, ovate, thorny. This plant is annual, has the appearance of *Carlina* and *Carthamus*, with corymbed branches like them, very tomentose. The inner calyxes seem to be barren^g. The roots of this and the first sort are bitter, diuretic and nourishing: quadrupeds, especially the horse and goat, eat the heads.

Native of the South of France, Italy and Siberia. Cultivated in 1629^h.

4. This is an annual plant, with a stiff white stalk two feet high. Leaves divided, ending in

^a Spec.

^b Illustr.

^c Gærtner.

^d Hort. kew.

^e Linn. mant.

^f Spec.

^g Illustr.

^h Hort. kew. from Park. par.

many

many points, which have spines; their upper side green, covered with brown hairs, their under side white and woolly: the stalk is terminated by one large head of pale blue flowers, appearing in July.

[Leaves pinnatifid, broadish, the jags lanceolate, ending in a very small spine; the sides unarmed, strigose on the upper surface, with stiff hairs, underneath tomentose. Calyxes with keeled scales, above even, ciliate at the base, not collected into a globular head, but in bundles: the lateral or lower calyxes smaller, barren, or without any floret¹.

Native of Spain and Portugal. Cultivated in 1731, by Mr. Miller².]

5. Root perennial, creeping. Stalks about a foot high. Leaves shorter and much finer divided than the preceding sorts; they are hoary, and armed on every side with sharp thorns: the stalks are terminated by one middle-sized globular head of flowers, blue or white, appearing at the end of June.

Native of Greece, whence Tournefort sent the seeds to the royal garden at Paris.

[This is probably no more than a variety of the third species.]

PROPAGATION AND CULTURE.

These plants are easily propagated by seeds, which, if permitted to scatter, the plants will come up in plenty, and a few of them may be transplanted to the places where they are designed to remain to flower; they require no other culture but to keep them clean from weeds: the second year they will flower and produce seeds; and the roots will continue two or three years after; but if the seeds scatter, the plants will become troublesome weeds; to prevent which, the heads should be cut off as soon as the seeds are ripe. They will grow almost in any soil or situation.

4. The seeds of this should be sown in the spring on a border of light earth, where the plants are to remain.

5. This is easily propagated by its creeping roots, or from seeds; it loves a dry soil and a warm situation.

[ECHINOPS. See *Carthamus*.

fruticosus. See *Rolandra*.

ECHINOPUS. See *Echinops*.

ECHINUS. See *Allamanda*, *Hydnum*, *Statice*.

ECHII FACIE. See *Anchusa*.

ECHIOIDES. See *Lycopsis*, *Myosotis*.

ECHITES. (So named by Browne, I suppose from *Exis*, a Viper; perhaps on account of its deleterious quality. *Exis* is the Serpent-stone.)

Lin. gen. n. 299. Reich. 324. Schreb. 421.

Jacqu. amer. 29. Juss. 146.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Contortæ*.—*Apocineæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted, sharp, small.

COR. one-petalled, funnel-form; border five-cleft, flat, spreading very much.

Nectary of five glands standing round the germ.

STAM. Filaments five, slender, erect. Anthers stiff, oblong, acuminate, converging.

PIST. Germs two. Style filiform, length of the stamens. Stigma oblong-headed, two-lobed, attached by a gluten to the anthers.

PER. Follicles two, extremely long, one-celled, one-valved.

SEEDS very many, imbricate, crowned with long down.

OBS. *E. caudata* has the border of the corolla terminated by very long linear tips. R.

ESSENTIAL CHARACTER.

Contorted. Follicles two, long, straight. Seeds downy. Cor. funnel-form, with the throat naked.

SPECIES.

1. *Echites biflora*.

Lin. spec. 307. Reich. 1. 595. Jacqu. amer. 30.

t. 21. pict. 21. t. 28. Swartz obs. 103. Brown.

jam. 180. 1. *Nerium*.

Apocynum scandens, fl. *nerii* albo. Plum. amer. 82. t. 96.

Peduncles two-flowered.

¹ Linn. spec.

² Hort. kew.

2. *Echites quinquangularis*.

Lin. spec. 307. Reich. 596. Jacqu. amer. 32.

t. 25. pict. 22. t. 32.

Peduncles racemed, leaves ovate, acute.

3. *Echites suberecta*. Oval-leaved *Echites*, or *Savanna-flower*.

Lin. spec. 307. syst. 253. Reich. 596. Jacqu.

amer. 32. t. 26. pict. 22. t. 33. Swartz obs.

104.]

Apocynum speciosissimum. Mill. dict. n. 4. Sloan.

jam. 1. 206. t. 130. f. 2.

[*Nerium? farmentosum*. Brown. jam. 180. 2.]

Peduncles racemed, leaves subovate, obtuse, mucronate.

4. *Echites agglutinata*.

Lin. syst. 253. Reich. 596. Jacqu. amer. 31.

t. 23. pict. 21. t. 30.

Peduncles racemed, leaves ovate, emarginate, with an acumen.

5. *Echites torulosa*. Climbing *Echites*.

Lin. spec. 307. Reich. 596. Jacqu. amer. 33.

t. 27. pict. 22. t. 34. Swartz obs. 105. Brown.

jam. 181. n. 4. t. 16. f. 2. (*Nerium*).

Peduncles subracemed, leaves lanceolate, acuminate.

6. *Echites umbellata*. Umbelled *Echites*.

Lin. spec. 307. Reich. 596. Jacqu. amer. 30.

t. 22. pict. 21. t. 29. Brown. jam. 182. 1.]

Apocynum obliquum. Mill. dict. n. 8. Sloan. jam.

1. 207. t. 131. f. 2.

[Peduncles umbelled, leaves ovate, obtuse, mucronate, stem twining.]

7. *Echites trifida*.

Lin. spec. 308. Reich. 597. Jacqu. amer. 31.

t. 24. pict. 22. t. 31.

Peduncles trifid, many-flowered, leaves ovate-oblong, acuminate.

8. *Echites repens*.

Lin. syst. 253. Jacqu. amer. pict. 22. t. 35.

Peduncles many-flowered, divided, leaves lanceolate-oblong.

9. *Echites corymbosa*.

Lin. syst. 253. Reich. 597. Jacqu. amer. 34.

t. 30. pict. 23. t. 37. Swartz obs. 105.

Racemes corymbed, stamens standing out, leaves lanceolate-ovate.

10. *Echites spicata*.

Lin. syst. 254. Reich. 597. Jacqu. amer. 34.

t. 29. pict. 23. t. 36.

Spikes axillary, short, stamens standing out, leaves sub-ovate.

11. *Echites caudata*.

Lin. syst. 254. Reich. 597. mant. 52. Burm. ind.

68. t. 26.

Corollas funnel-form, with very long linear tips.

12. *Echites scholaris*.

Lin. syst. 254. Reich. 597. mant. 53.

Lignum scholare. Rumph. amb. 2. 246. t. 82.

Leaves subverticilled, oblong, foliicles filiform, very long, umbels compound.

13. *Echites annularis*.

Lin. syst. 254. suppl. 166.

Stem twining, corollas salver-form, with an elevated ring on the tube.

14. *Echites siphilitica*.

Lin. syst. 254. suppl. 167.

Leaves ovate, subpetioled, very smooth, ribbed, panicles dichotomous, flowers in spikes.

15. *Echites succulenta*.

Lin. syst. 254. suppl. 167.

Prickles in pairs, extrafoliaceous, leaves linear, tomentose underneath, corollas funnel-form.

16. *Echites bipinosa*.

Lin. syst. 254. suppl. 167.

Prickles in pairs, extrafoliaceous, leaves lanceolate, smooth, corollas salver-form.

17. *Echites costata*.

Forst. fl. austr. n. 123. Rheed. mal. 9. 23. t. 14.

(Kametti-valli).

Peduncles in cymes, leaves elliptic-lanceolate, acuminate.

18. *Echites tomentosa*.*Vahl symb.* 3. 44.*Leaves cordate-oblong, acuminate, both they and the stem rough-haired, flowers in racemes, hairy.*19. *Echites domingensis*.*Swartz prodr.* 52. *Jacqu. ic. rar. collect.* 1. 73.*Peduncles racemed, leaves cordate-ovate, somewhat rigid, of a different colour underneath, stem twining.*20. *Echites asperuginis*.*Swartz prodr.* 52. *Plum. ic.* 27. (*Apocynum*.)*Peduncles racemed, follicles filiform, leaves oblong, acute, rough above, stem twining.*21. *Echites circinalis*.*Swartz prodr.* 52.*Peduncles axillary, many-flowered, jointed, segments of the corolla waved, leaves elliptic, stem twining.*22. *Echites floribunda*.*Swartz. prodr.* 52.*Racemes corymbed, leaves ovate, acuminate, nerves parallel, branches almost erect.*

DESCRIPTIONS, &c.

These plants have something singular in their habit which proclaims them at first sight. The leaves are opposite, petioled, quite entire, veined and shining: the third only has them frequently rugged. Common peduncles seldom longer than the leaves, lateral and alternate, except in *E. spicata*. Flowers void of scent. The nectareous glands, and the downy seeds in follicles, are of great importance in determining the character; whilst the corolla, varying much in the different species, is of no consequence in this respect. The stigma, in all, is glued to the inside wall of the cone formed by the anthers, and which separates at the explosion of the pollen, whilst the outer wall of the cone continues undissolved; the fecundation in the greater part being accomplished within the closed tube of the corolla, but in the rest within the cone stretched beyond the tube.

1. A branched shrub, full of a milky juice, supporting itself by stems partly erect, partly twining upon trees, and mounting them to the height of twenty feet; hence frequently acquiring the air of a tree. Leaves oblong, growing narrower to the base, obtuse at the end, with a small point three inches long. Peduncles sometimes, but rarely, three-flowered. Flowers handsome, very white, with a yellow throat. Native of most of the Caribbee islands, in salt marshes.

2. Stems twining, shrubby, somewhat scabrous. Leaves three inches long. Racemes simple. Flowers about sixteen, green, with a yellowish border, the edge of the tube white, and in form of a pentagon. This is not milky. Native of Carthagera in South America. It flowers in october.

3. A shrub, differing much from its congeners, abounding in milky juice, among other shrubs growing to the height of ten feet, but in savannahs only three feet, and sometimes scarcely a foot high. Stems scarcely twining, climbing. Leaves approaching more or less to an ovate form, either smooth on both sides, or scabrous at the back. The peduncles support a few large, handsome, yellow flowers, hirsute on the outside, and in the tube. The follicles are slender and brown^a.

This rises three or four feet high, with woody stalks, sending out a few lateral branches. Leaves smooth, opposite, of a shining green on their upper sides, but pale and veined underneath. The flowers are produced from the sides of the branches upon long peduncles, at the end of which are commonly four or five buds, but seldom more than one comes to flower; the others withering soon. The flowers being large, and of a bright yellow, make a fine appearance.

It grows naturally in Jamaica in the Savannas, whence it is chiefly known in that island by the name of Savanna-flower.

[It is also very common in the island of St. Domingo; flowering from september to march^b. Dr.

^a Jacquin.^b Ibid.

Browne says, that all the parts of this plant are extremely poisonous. Cultivated in 1759, by Mr. Miller^c.

4. Stems twining, shrubby. Leaves four inches long. Common peduncles the length of the leaves, often difform, sometimes bifid. Flowers small, white. When the follicles are separated, which is easily done, a drop of watery glutinous liquor, such as the whole plant abounds with, flows out at the two points by which they had cohered. On the mountains near Cape Francois, in Domingo; flowering in december^d.

3. This is a weakly plant, which commonly sustains itself by the help of the neighbouring bushes, and frequently rises to a considerable height among them. The branches and follicles are extremely slender and delicate^e. Stems twining, round, shrubby. Leaves two inches long. The common peduncles support about six small, yellow flowers. The whole plant abounds in a milky gluten^f. Frequent about the foot of the mountains in Liguanee, in the island of Jamaica^g. Flowering in march^h.

Swartz says, that Browne's figure is better than that of Jacquin.

Introduced in 1778, by Wm. Wright, M. D.ⁱ.

6. This climbs to the height of fifteen feet by means of its shrubby, twining, pliant stems, which are woody and suberous at bottom, but round, green and glossy above. The whole abounds in a clear glutinous juice. Leaves roundish-ovate, subcordate at the base, three or four inches long. The common peduncle has from four to seven flowers at the end, in a kind of umbel, with some stipules serving the purpose of an involucre. Flowers large, handsome, the border white, the tube green on the outside^k. Browne describes them to be pale yellow, with a pretty long slender tube. He remarks, that like the rest of this natural class, it is somewhat of a deleterious nature; and that there is a small variation of it in the drier parts of the savannas, with pointed leaves, and very slender stalks.

Native not only of Jamaica, but of Domingo and Cuba; flowering from october to february. Browne rightly perceiving that this plant did not properly conform itself to any known genus, constituted this new one of *Echites*, which is now universally adopted^l. Dr. William Houstoun sent Mr. Miller the seeds before 1733.

7. Stems twining, shrubby. Leaves three inches in length. Common peduncles short, with difform pedicels. Flowers large, pretty, the tube purple, and the border green. It climbs trees to the height of twelve feet, and the whole plant is milky. Native of South America near Carthagera, flowering in october^m.

8. This is an elegant shrubby plant, not milky; with round, smooth, samentose stems; the older ones procumbent, and putting out roots, the younger suberect, and thickened at the joints into discoid knots. Common peduncles usually bifid, bearing elegant, tender, red flowers. Native of St. Domingo; flowering from october to decemberⁿ.

9. This climbs up trees with its twining shrubby stems twenty feet in height, and the whole of it abounds with a white glutinous milk. Leaves ovate, oval, or obovate, acute, numerous, two inches long, entire, smooth, shining above, pale underneath, stiffish. Racemes terminating, branched, spreading, red. Flowers numerous, small, red or purple. Teeth of the calyx very minute, coloured. Corolla cylindric, very short: border reflex, with sharp segments. Nectareous glands connate. Filaments from the bottom of the tube, longer than the corolla. Germ twin, pubescent; style with a very slight longitudinal groove on each side, by which it may be easily split in two: stigma within the cone of anthers. Follicles horizontal, reflex, roundish, ob-

^c Hort. kew.^d Jacquin.^e Browne.^f Jacquin.^g Browne.^h Jacquin.ⁱ Hort. kew.^k Jacquin.^l Ibid.^m Ibid.ⁿ Ibid.

tufe, two-valved. Seeds oblong, with a bristly down.

Native of the island of St. Domingo, flowering in november. In the mountainous woods of Hispaniola, flowering in the spring.

The French inhabitants call it *Gras de galle*°.

10. This plant abounds in a white milk, and climbs the trees to the height of sixty feet. Stems round, woody, pliant, twining, an inch in diameter, with alternate branches a foot and half long, at different distances, leafy their whole length. Leaves oblong, veined, smoothish, acuminate, distich, half a foot long. Spikes opposite, close, an inch and half long, solitary, spreading, sometimes, but rarely, divided in two. Flowers numerous, white, small, subsessile. Native of Certhagea in New Spain, in thick lofty woods, flowering in july and august^p.

11. This is a tree. Leaves lanceolate-elliptic, naked. Flowers axillary, peduncled, erect, the size of those of Nerium or Oleander, funnel-form: border erect, terminating in linear tips longer than the whole corolla, a circumstance in which it differs from all other known plants. Native of the East-Indies.

12. This also is a tree, the branches of which are leafy only at the joints; where there are five or seven oval-lanceolate leaves, which are coriaceous, and transversely streaked. A few peduncles are produced among the leaves, of the same length with them. The flowers are very small. Follicles in pairs, a foot and half long, and therefore longer than any others that are known. Native of the East-Indies^q.

13. Leaves a foot long. Racemes bifid, peduncled, axillary. Calycine leaflets oblong, erect, concave. Tube of the corolla cylindric, longer than the calyx; segments of the border roundish, emarginate. Anthers connate, within the throat. Stigma obtuse, surrounded by a sharp ring. The nectary covers the germ with five small ovate scales.

14. This is a tree yielding a milky juice. Leaves on short petioles, a long span and upwards in length, and sharp. Peduncles axillary, divided into two branches, and these again into two shorter spikes, closely covered with flowers, and erect. Corolla large, white, with a large flat border. Stigma as in the genus Vinca. Follicles in pairs, divaricating. A decoction of the herb is a well known remedy at Surinam in the venereal disease. This and the preceding were observed at Surinam by Dalberg.

15. The filaments are bearded.

16. This and the preceding are very singular shrubs, much resembling each other. They are succulent, milky and two-spined. Without seeing the fructification they might be taken for Euphorbias. They are natives of the Cape of Good Hope, and were observed there by Thunberg^r.

17. Native of the Society isles^s.

18. Stem twining, round, as are also the petioles; the rib, nerves, and edges of the leaves rough-haired. Leaves three inches long, a little narrowed towards the base, broader at top, cordate at the base, the sinus being closed by the incumbent lobes; they are somewhat rugged, nerved, veined, having hairs pressed close scattered over both surfaces, but more copious, and a little longer on the rib and nerves, especially underneath. Peduncles axillary, shorter than the leaf, rough-haired. Flowers approximating, alternate, on short pedicels. Segments of the calyx lanceolate, attenuated, smooth. Corolla two inches in diameter, or a little more, with ash-coloured hairs scattered over the outside, but very thick in the tube where the filaments are inserted. Style filiform, the length of the tube. Found in Cayenne by von Rohr^t.

19, 20, 21, 22. Native of the West-India islands^u.

PROPAGATION AND CULTURE.

These plants have not yet been introduced into cultivation in Europe, but being mostly inhabitants of the West-Indies, they will require the protection of the bark stove, and must be increased and managed in the same manner with the tender sorts of APOCYNUM, which see.

ECHITES. See *Carissa*.]

ECHIUM. (ΕΧΙΟΥ of Dioscorides. ΕΧΙΕΙΟΥ of Nican-
der. Echium of Pliny: *ωπα τοὺς ἐχέις*. Being sup-
posed to cure the bite of the Viper; or to have seeds
resembling a Viper's head.)

Engl. *Viper's-Bugloss*. Fr. *Viperine*.

Lin. gen. n. 191. Reich. 203. Schreb. 251.

Gærtn. t. 67. Tourn. 54. Juss. 130.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Asperifoliae*.—*Borraginæ*. Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted, upright, permanent; divi-
sions subulate, upright.

COR. one-petalled, bell-shaped. Tube very short.
Border upright, gradually widened, five-cleft, ob-
tuse; divisions generally unequal: the two superior
ones longer; the inferior smaller, sharp, reflex.
Throat pervious.

STAM. Filaments five, subulate, length of the corolla,
declined, unequal: Anthers oblong, incumbent.

PIST. Germs four; Style filiform; length of the sta-
mens. Stigma obtuse, two-cleft.

PER. none. Calyx grown stiffer, guarding the seeds
in its cavity.

SEEDS four, roundish, obliquely acuminate.

OBS. *E. lævigatum* & *Italicum* have corollas nearly
equal. The stamens and style are different as
to length. R.

ESSENTIAL CHARACTER.

Cor. irregular, with the throat naked.

SPECIES.

1. *Echium fruticosum*. *Shrubby Viper's Bugloss*.

Lin. spec. 199. syst. 189. Reich. 1. 401. hort.

upf. 43. Comm. hort. 2. 107. t. 54. Pluk.
mant. 1. 341. f. 7. (Buglossum.)

Stem shrubby, leaves lanceolate, attenuated at the base,
villose-strigose, without veins, calycine leaflets lan-
ceolate, acute.

[2. *Echium candicans*. *Hairy tree Viper's Bugloss*.

Lin. syst. 189. suppl. 131. Jacqu. collect. 1. 44.

Stem shrubby, leaves lanceolate, nerved, they and the
branches hirsute, calycine leaflets oblong and lan-
ceolate acute, styles rough with hairs.

3. *Echium giganteum*. *Gigantic Viper's Bugloss*.

Lin. syst. 189. suppl. 131.

Stem shrubby, leaves lanceolate, attenuated at the base,
hairy, hairs very short, bractes and calyxes strigose,
stamens longer than the corolla.

4. *Echium strictum*. *Upright Viper's Bugloss*.

Lin. syst. 189. suppl. 131.

Stem shrubby, stiff, branching; leaves oblong-lanceolate,
hairy, corollas somewhat bell-shaped, stamens longer
than the corolla.

5. *Echium spicatum*. *Spiked Viper's Bugloss*.

Lin. syst. 189. suppl. 132.

Stems ascending, very simple, flowers in spikes.

6. *Echium argenteum*. *Silvery Viper's Bugloss*.

Lin. syst. 189. Reich. 401. mant. 202. Berg.
cap. 40.

Leaves linear, hirsute and whitish, patulous at the
tip.

7. *Echium capitatum*. *Headed Viper's Bugloss*.

Lin. syst. 189. Reich. 401. mant. 42.

E. hispidum. *Burm. prodr. p. 5.*

Stem hairy, flowers head-corymbed, equal, stamens
longer than the corolla, leaves hispid.

8. *Echium plantagineum*. *Plantain-leaved V. B.*

Lin. syst. 189. Reich. 402. mant. 202. Barr.
ic. 1026.

β. *Jacqu. hort. 1. t. 45.*

Root-leaves ovate, marked with lines, petioled.

9. *Echium laevigatum*. *Smooth-stalked Viper's Bugloss*.

Lin. spec. 199. syst. 190. Reich. 402.

Stem even, leaves lanceolate, naked, scabrous about the
edge and at the tip, corollas equal.]

10. *Echium*

• Jacquin and Swartz obs. p Jacquin. q Linn. mant.
• Linn. suppl. • Forster. • Vahl. • Swartz.

10. *Echium italicum*. Wall Viper's Bugloss.
Lin. spec. 200. *syft.* 190. *Reich.* 403. *hort. upf.* 35.
Huds. angl. 83. *With.* 199. *Hall. belv.* n. 604.
E. majus & asperius, fl. albo. *Baub. pin.* 254. *Raii hist.* 498.
E. fl. albo. *Camer. epit.* 738.
Lycopsis. *Ger. emac.* 802. 1. *Park. theat.* 519. *Raii syn.* 227.
Stem herbaceous hairy, leaves linear-lanceolate strigose-hirsute, the lower ones nerved; corollas nearly equal; stamens longer than the corolla.
11. *Echium rubrum*. Red Viper's Bugloss.
Lin. syft. 190. *Jacqu. austr.* 5. *app. t.* 3.
Flowers in a long spike made up of short little racemes, corollas nearly equal, leaves hispid.
12. *Echium vulgare*. Common Viper's Bugloss.
Lin. spec. 200. *Reich.* 403. *hort. cliff.* 43. *fl. suec.* n. 168. *Huds. angl.* 83. *With.* 200. *Lightf.* 136. *Relb. cantab.* n. 155. *Engl. bot. t.* 181. *Fl. rust.* 136. *Hall. belv.* n. 603. *Scop. carn.* n. 200. *Pollich pal.* n. 193. *Neck. gallob.* 103. *Krock. siles.* n. 292. *Villars dauph.* 2. 448. *Fl. dan.* t. 445. *Blackw. t.* 299. *Plenck, ic. t.* 136. *Baub. pin.* 254. *Clus. hist.* 2. 143. *Ger. emac.* 802. 2. *Park. theat.* 414. 1. *Raii hist.* 498. *syn.* 227. *Mor. hist. f.* 11. t. 27. f. 1. *Mill. dict.* n. 2.
Stem tubercled and hispid, stem-leaves lanceolate hispid, flowers in lateral spikes.
13. *Echium violaceum*. Violet-flowered Viper's Bugl.
Lin. syft. 190. *Reich.* 403. *mant.* 42. *With.* 201. *Retz. obs.* 2. n. 11. *Murr. prodr.* 143. *Villars dauph.* 2. 449.
E. sylvestre hirsutum maculatum. *Baub. pin.* 254.
E. alterum, f. *Lycopsis anglica.* *Merr. Raii syn.* 228.
E. fl. rubro. *Clus. hist.* 2. 164. *Ger. emac.* 802. f. 4. *Raii hist.* 499.
Corollas equal to the stamens, tube shorter than the calyx.
14. *Echium creticum*. Cretan Viper's Bugloss.
Lin. spec. 200. *syft.* 190. *Reich.* 404. *hort. cliff.* 43. *Gertn. fruct.* 326. *Clus. hist.* 2. 165. 1, 2.
E. cret. latifolium rubrum. *Baub. pin.* 254. *Raii hist.* 498.
β. E. angustifolium. *Mill. dict.* n. 6.
E. cret. angustifolium rubrum. *Baub. pin.* 254. *Raii hist.* 499.
Stem procumbent, fruiting calyxes distant.
- [15. *Echium orientale*. Oriental Viper's Bugloss.
Lin. spec. 200. *Reich.* 404. *hort. cliff.* 43. *Tourn. itin.* 2. f. 107.—3. 94. *edit. oct.*
Stem branched, stem-leaves ovate, flowers solitary lateral.]
16. *Echium lusitanicum*. Portugal Viper's Bugloss.
Lin. spec. 200. *Reich.* 404.
Corollas longer than the stamens.
17. *Echium sericeum*.
Vahl symb. 2. 35.
Leaves linear-wedge-shaped, stem suffruticose, both hoary.
18. *Echium fetosum*.
Vahl symb. 2. 35. *Forsk. descr. p.* 41.
Leaves linear-lanceolate, stem suffruticose procumbent, both hispid and hoary.
19. *Echium glabrum*.
Vahl symb. 3. 22.
Leaves linear-lanceolate, smooth above, callous-dotted beneath on the outside, spikes alternate.
20. *Echium rosmarinifolium*.
Vahl symb. 3. 22.
Leaves petioled linear-lanceolate reflex at the edge, hairy underneath and hoary.
21. *Echium sphærocephalum*.
Vahl symb. 3. 22.
E. capitatum. *Lamarck.*
Leaves linear-lanceolate strigose, heads solitary terminating, branches smooth.

DESCRIPTIONS, &c.

Most of the species are herbaceous, some however are suffrutescens. The flowers are in spikes or

spike-panicled, in the spikelets the flowers all point one way.]

1. This rises with a shrubby stalk two or three feet high, dividing at top into several branches. Leaves sessile, hairy, light green. The flowers are produced singly between the leaves at the ends of the branches; they are of a purple colour, and in shape much like those of the Cretan fort. They appear in may and june, but the seeds do not ripen in England.

[Stamens not longer than the corolla^a.

Native of the Cape of Good Hope.—Cultivated in 1759, by Mr. Miller^b.

2. This is a handsome shrub. The stems and branches are woody and somewhat tomentose, marked with linear, transverse scars from fallen leaves. Leaves a span long, approximating, lanceolate-subulate, attenuated at the base to the insertion where it widens, marked with lines above and veined underneath, the veins are very long and simple; towards the panicle they are imbricate and narrower at the base. Flowers in a conical panicle formed of many spikes at the ends of the branches. Spikes pedicelled, simple, pointing one way, bending inwards. Corollas among the smaller ones of this genus, subhirsute, blue. The whole plant is white, and as it were silvery, with a soft close shagginess covering the whole, hardly excepting the corolla.

Native of the high rocks of Madeira; where it was found by Mr. Francis Masson^c.—Introduced in 1777^d.

3. A very lofty shrub, with woody, round, hoary, smooth branches. Leaves a span long, and the breadth of a finger, scabrous, veined. Flowers pointing one way, and forming a very large, pyramidal, terminating thyrse, consisting of long, spiked peduncles. Corollas obtuse, nearly equal, white.

Found on the rocks of Teneriffe by Mr. Francis Masson^e.—Introduced in 1779^f.

4. This is distinguished by the stiffness and uprightness of the stem, by its petioled oblong leaves, and by the hairs of the stem being turned downwards. Peduncles axillary at the top of the stem solitary, naked, with three-parted spikelets, contracted into a head at the tip. Corollas small, blue, with the stamens standing out.

Found by Masson on the rocks of Teneriffe^g.—Introduced in 1779. Biennial. Flowering most part of the year^h.

5. Root-leaves very many, a hand in length, lanceolate-linear, very hairy. Stems twice the length of the leaves, with a few smaller, alternate, hairy leaves. Spike terminating, nearly of a finger's length, compact. Calyxes hoary. Stamens longer than the corolla.

Native of the Cape of Good Hopeⁱ.

6. Stem branched determinately. Leaves scattered, acute, bent outwards at the tip, hoary with white hairs.

Native of the Cape^k.

7. Stem woody, branched. Leaves lanceolate, with patulous, pellucid hairs; bulbous at the base, scattered over them. Flowers crowded closely into terminating heads. Corollas regular, funnel-form, scarcely larger than those of *Lycopsis*. Stamens twice as long as the corolla; and style double the length of the stamens^l.

Native of the Cape. See n. 21.

8. Leaves above hairy, soft, hispid: root-leaves like those of Plantain, very entire, large: stem-leaves lanceolate, sessile. Stems hairy, with soft not strigose hairs; brown dots under the hairs, as in the rest, but minute. Corollas violet-coloured (not blue, as in *E. vulgare*, nor shorter than the calyx, as in *E. creticum*). Bractes between the flowers, half-cordate, the length of the calyx; not subulate, as in *E. vulgare*, nor longer than the calyx, as in *E. creticum*. Annual.

^a Linn. syft.

^b Hort. kew.

^c Linn. suppl.

^d Linn. mant.

^e Hort. kew.

^f Linn. suppl.

^g Hort. kew.

^h D. Royen in Linn. mant.

ⁱ Linn. suppl.

^j Hort. kew.

^k Linn. suppl.

Native of Italy^m.—It flowers from July to October.—Introduced 1776, by Monf. Thouinⁿ.

9. Stems undershrubby, a foot in height. Leaves smooth, except that they are scabrous with mucronate callous dots about the edge, along the keel, and at the tip above. Racemes from the axils of the upper leaves, pointing one way, and smooth. Calyx smooth. Corolla but little irregular. Stamens declined. Seeds muricate.

Native of the Cape of Good Hope^o.—Introduced in 1774, by Mr. Francis Maffon^p.¹

10. This rises with an upright hairy stalk; the flowers are produced in short spikes on the side of the branches; they are small, and scarcely appear above the calyxes. Some plants have white flowers, others purplish. The calyxes are very hairy, and cut into acute segments.

[Stem erect, branched, very rough with hard bulbous hairs. The flowers are smaller than in *E. vulgare*, but like that irregular, always white, not blue. Stamens very long^q.

Lycopsis Bauh. pin. 255. which is variety β . of the *Species Plant.* and supposed to be the Jersey plant, has smaller corollas, hairy on the outside, especially towards the top, and more regular than in the plant of the South of Europe. Perhaps the difference may arise merely from situation^r.

The Pyrenean *Echium*, which is set down in Syft. veget. as a variety of *E. lævigatum*, is more probably a variety of this. It is very like *E. italicum*, and is extremely hispid with white stinging hairs. Corolla not wider than the calyx, pale flesh colour, not white, funnel-form, almost regular, twice as long as the calyx, pubescent on the outside and paler. Filaments double the length of the corolla, deep red. Anthers blue. Seeds even, subtrigonal at top with a sort of intermediate or inner toothlet, which is more produced than the rest. This is *E. majus et asperius*, flore dilute purpureo of Tournefort, inst. 135. And, *Lycopsis monspeliaca*, fl. dilute purp. *Mor. blas.* 284^s.

11. Stem erect, about a foot high; radical leaves long and lanceolate, hairy, deepish green above, paler below and with a strong back nerve: stem-leaves smaller and narrower: stem rough and covered with red points: spike of flowers about a foot long, consisting, as in the common *Echium*, of a great many separate spikelets or smaller flowering spikes proceeding from the axæ of the small leaves, and at first coiled as usual. Flowers rather small than large, of a paleish red, and with nearly equal and somewhat triangular segments. Anthers pale blue.

Native of Hungary, where it grows in plenty^t.

12. Stem erect, eighteen inches or more in height, when young simple, but becoming branched. The whole plant is hispid. The stem frequently, and sometimes the leaves are beautifully spotted with red. The hairs on the stem rise from glossy purplish black tubercles. Root-leaves forming a tuft, near two feet long, petioled. Stem-leaves sessile, four or five inches long; all lanceolate, quite entire, scabrous and hairy on both sides. Flowers numerous in spikes; those of each spike pointing one way, and closely wedged together. Calyx fringed with white hairs. Corolla before it expands of a fine red, afterwards of a bright blue. The colour however varies, to pale red, and white; if the corolla be blue, the stems are blueish, the stamens purple, and the bulbs from which the hairs spring are blood-red; but if the corolla be pale red, then the other parts of the flower are of the same colour, and the hair-bulbs are yellow; and if it be white, all the parts of the flower are of that colour, and the hair-bulbs green. The outside of the corolla is set with short hairs, and is marked with five rising ribs extending from the middle of each segment down to the base; the upper and lateral segments

are rounded; the lowest somewhat pointed. The filaments are red and longer than the corolla; sometimes much longer, and sometimes very little longer or barely equal to the upper segment; anthers gray. Style very hairy: germs embedded in a fleshy receptacle.—It is a showy plant, and if it were not common, would have a place in our gardens. It is biennial; and once in three years appears abundantly in the corn fields of Cambridgeshire, &c. where it is known by the name of *Cat's-tail*. Bees are fond of the flowers, but their wings are apt to be torn by the strong hairs^u.

That the *E. anglicum* of Hudson is the *E. vulgare* of Linneus cannot be doubted^x.

13. It resembles the foregoing very much, but the corolla is of a violet-colour: the stem is more diffused: the stamens are not longer than the corolla; they are purple, but the style is white and hairy; the tube of the corolla is almost as long as the calyx: and the whole appearance is different^y.

The colour of the herb is a more pleasant green, and it is not so hairy; the hairs also are more tender, and not tubercled at the base. The spike of the flowers is shorter and not so compact. The colour of the corolla is constant, not red at first, but always pale blue. The length of the stamens differs, so that one will equal the longest part of the corolla, and the rest be longer or shorter than the opposite segment^z.

The whole plant is smaller and weaker than the foregoing, which frequently grows very strong and large on walls, whereas this grows in corn-fields and on banks. The flowers are constantly smaller, and the stamens never exceed the corolla, which is unequal^a.

Stem a foot high, branching at the top and bottom. The hairs are softer, and some of them rise from tubercles; these are hardly if at all discernible on the leaves, though they are on the stem where they are intermixed with short hairs not rising from tubercles. The calyx is very unequal, the segments broader than in *E. vulgare*. Corolla deep blue, half as long again as the calyx, at the bottom of the two upper segments beset both within and without with scattered hairs^b.

It is thus described by Retzius—Root annual, simple, fusiform. Stem branched, hispid, almost upright. Lower leaves lanceolate, obtuse: upper oblong-cordate, acute: all hispid, the hairs not issuing from a tubercled base. Flowers racemed, pointing one way: raceme revolute, elongated; bractes lanceolate, ciliate, alternately lateral. Calyx subsessile, with hairs scattered over it, divisions linear-lanceolate, spreading. Corolla violet-coloured, striated, irregular; the tube much shorter than the calyx, white half way up, thinly hairy. The lower stamens the length of the upper lip; the upper ones the length of the lower lip; the fifth shorter; all bowed towards the upper lip: filaments flesh-coloured, the two longer naked, the rest having a few long hairs scattered over them. Anthers small, black. Style hairy, red, the length of the shorter filaments growing finally to the length of the corolla. Stigma bifid, slender. Seeds small, dark-brown, dotted-scabrous.

I have little doubt but that this is Miller's first species.] He says, that the leaves of this are shorter, and much broader than those of the common sort; the spikes of flowers much longer, and the stamens equal in length to the corolla, whereas those of the common sort stand out much beyond it.

[Monf. Gouan supposes this plant to be no more than a variety of *E. vulgare*: and Monf. Villars can scarcely think that his *E. violaceum* is the same with that of Linneus, and thinks it possible that it may be an intermediate species between the *E. violaceum* and *italicum* of Linneus. He says, that in his plant the leaves are wider, the stem branching,

^m Linn. mant.

ⁿ Hort. kew.

^o Linn. spec.

^p Hort. kew.

^q Haller.

^r Linn. spec.

^s Retz. obs. 5. 2. Linn. mant. 334.

^t Jacquin.

^u Withering, Stokes in With. Woodw. Mfs. Relh. Hall. Scop.

^x Woodw. Mff.

^y Linn. mant.

^z Murray,

^a Woodw. Mfs.

^b Stokes in With.

the flowers red and more regular, and the stamens not appearing out of the corolla. The plant is very rough with white hairs, which give it a whitish colour, and it is much branched.

Native of Austria and Germany. In England, near Norwich.—Introduced 1780, by Casimir Gomez Ortega, M. D. It flowers in July.^c]

14. This has trailing hairy stalks about a foot long, putting out several side branches. Leaves lanceolate, hairy, about three inches long, and three quarters of an inch broad, sessile. The flowers come out on slender spikes, upon long peduncles, from the axils; they are large, of a reddish purple, which turns to a fine blue when they are dried.

[Corollas deep red, with the tube shorter than the calyx. Filaments not longer than the shorter lip of the corolla, a little villose at the tip.^d The pericarp consists of four crustaceous, brittle nuts, resembling grape-stones; on one side convex, with a raised furrow in the middle between two lateral tubers; on the other side angular; scabrous on all sides with white bony dots, brown at the tip; they are appendicled at the base with an unperforated triangular area; on the outside they are of a ferruginous smoky colour, within they are black and very smooth; they are one-celled and without valves. Seeds solitary, ovate, long-beaked, somewhat compressed, of a bay colour.^e

Native of the Levant. It is a biennial, and flowers from July to September. Cultivated in 1683, by Mr. James Sutherland.^f]

β. This has branching stalks, a foot and half long, declining towards the ground, and covered with stinging hairs. Leaves four inches long, and not more than half an inch broad, pretty much warted, and hairy. The flowers grow in loose spikes from the sides of the stalks, and also at the ends of the branches, they are of a reddish purple colour, but not so large as those of the preceding; and the stamens are longer than the corolla. This also, if different, is a native of the Levant.

[15. Root above a foot long, and two inches thick, mucilaginous and sweetish. Stem about three feet high, an inch thick, pale green, hard, solid. Lower leaves fifteen or sixteen inches long, and four or five inches wide, pointed, whitish green, fatty above, cottony underneath, with a strong midrib; they diminish considerably along the stem, not being above half a foot in length; they are also less cottony than the former, and much more pointed. Branches about half a foot long; both they and the top of the stem rough with strong hairs, accompanied by leaves about an inch and half in length. All these branches are subdivided into smaller ones bending like a scorpion's tail, and loaded with flowers an inch and half in length, of a pale blue colour, with two red bands on three of the segments, on a bright purple ground. Calyx almost as long as the corolla, rough with very large hairs. Style almost as long as the corolla, slightly villose, and purple. The flower has no smell.^g

Found in the Levant by Tournefort.—Introduced in 1780, by Monf. Thouin.^h]

16. The lower leaves of this are more than a foot long, and two inches broad in the middle, gradually lessening to both ends, and covered with soft hairs. The stalks grow two feet high: the flowers are in short spikes from the sides of them.

Native of Spain and Portugal. [Introduced in 1731, by Mr. Miller.ⁱ

17. Stems several, diffused, woody at the base, simple, a palm or more in height, soft at bottom, somewhat rugged at top, hoary with white hairs, pressed close, and placed on minute tubercles, the lower ones longer, the upper ones more dispersed. The lower leaves from two to three inches long, crowded, linear, ciliate below, gradually widening towards the top, dilated at the base, embracing, obtuse, hoary on both sides with close short hairs

placed on minute dots; the upper ones an inch long, and recurved. Spike terminating, pointing one way, hoary-haired. Bractes ovate-lanceolate, obtuse. Corolla villose on the outside. Stamens longer than the corolla.

Native of Egypt.

E. argenteum differs from this in having lanceolate leaves, attenuated outwards and acute, with spreading and more hirsute hairs.

18. Stems a palm in height, branched at bottom, covered with little whitish tubercles, crowded close together, and having white rigid hairs on the top. Leaves sessile, half an inch long, gradually smaller, rigid. Spike terminating, solitary; flowers at first crowded, but afterwards more remote. Bractes ovate. Corolla half an inch in diameter, hoary. Stamens longer than the corolla. Nuts small, ovate, acuminate, muricate. It differs from the preceding in having procumbent stems, hairs that are longer, stiff and rough, not pressed close, and leaves narrow at the tip.

19. Branches scattered, a little compressed at top, purplish ash-coloured with very slender appressed villose hairs. Leaves sessile, firm, an inch long, even. Spikes from the upper axils, erect, few-flowered, two inches long. Bractes ovate-lanceolate, the length of the calyx. Calyxes hairy, with lanceolate segments, the same length with the tube of the corolla. Stamens longer than the corolla. It differs from *E. lævigatum* in having the branches a little villose, the leaves narrower, not at all callous about the edge, the calyxes hairy, and the flowers smaller.

20. Branches round, scarred, hoary with hairs. Leaves scattered, an inch long, resembling those of Rosemary, on the upper surface hairy and green, with a groove along the middle, and somewhat rugged. Petiole very short. Raceme terminating, short. Leaflets of the calyx linear, hairy. Corolla almost regular, half as long again as the calyx. The place of the four last is between the sixth and seventh species.

21. Branches scattered, round below, angular above, towards the end villose and toothletted from the fallen leaves. Leaves scarcely half an inch long, sessile, frequent, subimbricate, beneath having callous dots, above and on the edge having only scattered strigæ. Heads globular, hairy, on short peduncles, with small flowers that are almost regular, and have stamens longer than the corolla.

E. capitatum differs from this in having the branches more hairy, the leaves three or four times as long, the heads of flowers on short branches collected into a sort of corymb, not solitary on lengthened spreading branches, as in this, and the calyxes hoary with abundance of hairs, which in this are fewer and more distinct.—This and the two preceding sorts are natives of the Cape of Good Hope.

The place of the last is between the seventh and eighth species.^k]

PROPAGATION AND CULTURE.

1. It is propagated by seeds, when they can be obtained, which should be sown in pots filled with light sandy earth soon after they are received. These may be exposed to the open air till the beginning of October, when the pots should be placed under a frame, to guard them from frost; but in mild weather, they should have the free air, to prevent the seeds from vegetating till the winter is past; for if the plants come up at that season, their stems will be weak and full of juice, and very liable to rot with damps; therefore it is much better if the plants do not come up till toward March, which is the usual time of their appearing, when the seeds are not forced by warmth. When the plants are fit to remove, they should be each planted into a small pot filled with light earth, and placed under a frame to forward their putting out new roots; then they should be gradually inured to bear the

^c Hort. kew.

^d Tinn. spec. & syst.

^e Gartner.

^f Hort. kew.

^g Tournef. voy.

^h Hort. kew.

ⁱ Ibid.

^k Vahl.

open air, and the latter end of may be placed abroad in a sheltered situation, where they may remain till the beginning of october; at which time they must be removed into an airy glass-case, where they may enjoy the sun and have free air in mild weather. During the winter season these plants must be sparingly watered; for as their stems are succulent, too much moisture will cause them to rot. In the summer they should be set abroad in a sheltered situation, and treated in the same manner as other plants from the same country.

14. This is annual, and the most beautiful of all the forts. The seeds must be sown every year where they are designed to remain; and the plants require no other culture but to keep them clean from weeds, and to thin them where they grow too close. In july they flower, and their seeds ripen in five or six weeks after. The seeds of the other forts being sown in the spring, will the second summer after produce flowers and seeds, after which they seldom continue. They all delight in a rubbishy gravelly soil, and will grow upon the tops of old walls or buildings; where, when once they have established themselves, they will drop their seeds, and thereby maintain a succession of plants without any care, and on these places they appear very beautiful.

[ECHIUM. See *Lycopsis*, *Myosotis*, *Onosma*, *Pulmonaria*.
ECLIPTA. (From *Εκλειπναι*, imperfect, or *εκλειψις*, a deficiency.)

Lin. gen. Reich. n. 1056. Schreb. 1316. Juss. 187. Gærtn. t. 169.

Class. 19. 2. Syngenesia Polygamia Superflua.

Nat. Order of compound flowers.—*Corymbiferae* Juss.

GENERIC CHARACTER.

CAL. Common many-leaved: leaflets lanceolate, nearly equal, in a double series.

COR. compound rayed: of the ray most plentiful, female; of the disk hermaphrodite.

Proper of the hermaphrodite tubular, four-cleft, upright, outwardly mealy.

In the females very narrow, ligulate.

STAM. in the hermaphrodites. Filaments four, very short. Anther cylindric.

PIST. in the hermaphrodites. Germ oblong. Style middling. Stigma two-cleft, spreading.

PER. Calyx unchanged.

SEED in the hermaphrodites oblong, compressed, notched, obtuse, unarmed. In the females three-sided, oblong, notched, obtuse, unarmed.

REC. flattish, chaffy: chaffs very narrow.

OBS. This genus is distinct from *Verbesina* in having four-cleft corolllets, and unarmed seeds; and from *Cotula* in having a chaffy receptacle.

ESSENTIAL CHARACTER.

Recept. chaffy. Down none. Corolllets of the disk four-cleft.

SPECIES.

1. *Eclipta erecta*. Upright *Eclipta*.

Lin. syst. 778. Reich. 3. 874. mant. 286. Swartz obs. 311. Gærtn. fruct. 2. 441. Rumph. amb. 6. t. 18. f. 1. Lour. cochinch. 505. Vahl symb. 1. 74.]

Verbesina alba. Lin. spec. 1272. mant. 475. hort. cliff. 500. Mill. dict. n. 2. Gron. virg. 128.

[*Cotula alba*. Linn. syst. ed. 13. 564. Murr. prodr. 225.

Eupatoriophalacron balsaminæ fol., fl. albo discoide. Vaill. art. par. 1720. 597. Dill. elth. 138. t. 113. f. 137. Sloan. jam. 1. 260. and *Mentha arvensis*. Sloan.

Scabiosa conyzoides, &c. Pluk. alm. t. 109. f. 1. Mor. hist. 3. 47. f. 6. t. 13. f. 16.

Micrelum asteroides. Forsk. p. 152. n. 96. Stem erect, leaves deflected at the base and sessile.

2. *Eclipta punctata*. Dotted-stalked *Eclipta*.

Lin. syst. 778. Reich. 875. mant. 286.

Bellis ramosa. Jacq. amer. 216. t. 129. pict. 106. t. 197.

Stem erect dotted, leaves flat.

3. *Eclipta latifolia*. Ovate-leaved *Eclipta*.

Lin. syst. 778. suppl. 378.

Stem erect, leaves ovate petioled.

4. *Eclipta prostrata*. Trailing *Eclipta*.

Lin. syst. 779. Reich. 874. mant. 286. Gærtn. fruct. 2. 441. Lour. cochinch. 505. Thunb. jap. 321. Swartz obs. 311. Vahl symb. 1. 74.]

Verbesina prostrata. Lin. spec. 1272. mant. 475. Mill. dict. n. 4.

E. menthae arvensis folio. Vaill. art. par. 1720. 598. Dill. elth. 139. t. 113. f. 138.

Chrysanthemum maderaspatanum, &c. Pluk. alm. t. 118. f. 5.

Micrelum tolak. Forsk. descr. p. 152. n. 96.

Stem prostrate, leaves somewhat waved and petioled.

5. *Eclipta sessilis*. Sessile-leaved *Eclipta*.

Swartz prodr. 114.

Stem erect, leaves slightly embracing ovate toothed, flowers axillary sessile discoid.

DESCRIPTIONS, &c.

1. The herb is like that of *Coreopsis Bidentis*. The leaves are marked with three nerves, and are in pairs remote from each other. The flowers come out two together alternately from the axils^a.

Stem shorter and thicker than in the fourth, slightly flexuose, hirsute with hairs not pressed to the stem but horizontal; it is scarcely branched. Leaves narrower, more apparently serrate, the serratures toothletted and unequal; they are veined, with three veins straighter, the veins are hirsute, though the surface, like the upper one, be roughened with close-pressed hairs. Peduncles short, either solitary or two, seldom three from the same axil. Calyx not hemispherical but ovate with broader segments^b.

It is thus described by Swartz—

Stem erect, round, a foot high, leafy, almost simple, hispid with hoary hairs. Leaves opposite, tooth-serrate, wedge-shaped, broad-lanceolate obtuse, triple-nerved, hispid. Peduncles alternate, usually in pairs, longer than the leaves, one-flowered. Flowers white. Calyx of five or six leaves: scales broad-lanceolate, two larger, somewhat hispid. Flowers discoid; of the disk numerous, four-cleft, minute; of the ray very many, minute. Seeds angular, thickish, naked, without any pappus. Receptacle naked, not chaffy.

Native of the West Indies; and of the East Indies, Cochinchina, &c. if *E. erecta* of different authors be the same plant, which may be doubted. Loureiro says that in the Cochinchina plant the leaves are not nerved, nor properly serrate, nor sessile; and that the flowers are not in pairs. He adds, that the juice is used for dyeing hair both of men and quadrupeds, whence the natives call it ink-plant.

Cultivated 1690, in the royal garden at Hampton court. It flowers from july to september, and is annual^c.—Linneus marks it as biennial.

2. Stem round, branching, leafy, rugged, a foot and half high, reddish with white dots. Leaves lanceolate-oblong, acute, serrate, rugged, opposite, sessile, from two to three inches long. Peduncles one-flowered, subterminating. Flowers whitish, having no smell. The whole has a green watery sap, which turns black in the air, and may be used as ink. If it could be fixed, it would make a very fine dye. The negroes are said to increase the blackness of their skin by this juice^d.

This resembles the first species, but the stem has white dots scattered over it.—Annual, and a native of Domingo and Martinico^e.

3. Root annual. Stem two feet high, round, hispid, brachiate, and finally compound. Leaves opposite, acuminate, three-nerved, wrinkled, pubescent-scabrous, serrate. Flowers terminating, solitary, on very short peduncles, the size of those of *Sigesbeckia*, and white: calyx of about eight leaflets, close, and the length of the flower; ray of the co-

^a Linn. mant.

^b Murr. prodr.

^c Hort. kew.

^d Jacquin.

^e Linn. mant.

rolla short, as in *Achillea*, with subtrifid petals; in the disk four florets which are five or six-cleft: anthers black: stigmas recurved; seeds oblong, subtrigonal. Receptacle the length of the seeds.

Native of the East Indies¹.—It flowers in September and October; and was introduced in 1777, by Sir Joseph Banks, Bart.²

4. This is often erect, like the first sort, with sessile flowers, or however on very short peduncles³.

The flowers come out alternately in pairs. Calyx simple. Anther brown. Seeds awnless, muricate in four rows⁴.

Native of the East Indies, Japan, Cochinchina, and the isle of Tanna in the South Seas.—It flowers in August, and was cultivated by Mr. Miller in 1759⁵. Also prior to that in the Eltham garden⁶. It is an annual plant.

5. This is an annual plant, native of Jamaica⁷.]

PROPAGATION AND CULTURE.

These plants are propagated by seeds, sown upon a hot-bed in the spring; when the plants are fit to remove they should be transplanted into a fresh hot-bed to bring them forward: they must be shaded till they have taken new root, and then treated as other tender annuals, being careful not to draw them up too weak. In June they may be taken up with balls of earth, and being planted in pots are to be set in a stove, where they must be shaded and watered, and where they must remain to flower well.

[ECLOPES. See *Relbania*.

EDECHIA. See *Laugeria*.

EDERA. See *Hedera* and *Rhus*.]

EDGINGS.

The best and most durable plant for edgings in a garden is Box; which, if well planted, and rightly managed, will continue in beauty several years: the best season for planting this, is either in the autumn, or very early in the spring; for if you plant it late, and the season should prove hot and dry, it will be very subject to miscarry, unless great care be taken to supply it with water. The best sort for this purpose is the Dwarf Dutch Box.

These edgings are only planted upon the sides of borders next walks, and not (as the fashion was formerly) to plant the edgings of flower-beds, or the edges of fruit-borders in the middle of gardens, unless they have a gravel-walk between them; which renders it proper to preserve the walks clean, by keeping the earth of the borders from washing down into the walks in hard rains.

It was also the practice formerly to plant edgings of divers sorts of aromatic herbs, as Thyme, Savory, Hyssop, Lavender, Rue, &c. But as these very soon grow woody, so that they cannot be kept in due compass, and in hard winters are often killed in patches, whereby the edgings are rendered incomplete, they are now seldom used for this purpose.

Some people make edgings of Daisies, Thrift, Catchfly, and other flowering plants; but these also require to be transplanted every year, in order to have them handsome, for they soon grow out of form, and are subject to decay in patches; so that there is not any plant which so completely answers the design as Dwarf Box.

[EGG-PLANT. See *Solanum*.

EGLANTERIA,

and

EGLANTINE.

EHRETIA. (So named after that ingenious artist and botanist, G. D. Ebrēt.)

Fr. Cabrillet.

Lin. gen. n. 257. Reich. 278. Schreb. 352.

Brown. t. 16. Jacq. amer. 45. Juss. 128.

Class. 5. 1. Pentandria Monogynia.

Nat. Order of *Asperifoliae*.—*Borragineae* Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, bell-shaped, half five-cleft, obtuse, very small, permanent.

COR. one-petalled. Tube longer than the calyx. Border five-cleft. Divisions somewhat ovate, flat.

STAM. Filaments five, subulate, patulous, length of the corolla. Anthers roundish, incumbent.

PIST. Germ roundish. Style filiform, thicker above, length of the stamens. Stigma obtuse, emarginate.

PER. Berry roundish, one-celled.

SEEDS four, convex on one side, cornered on the other.

OBS. The seeds of *E. Bourreria* are two-celled.

The berry is two-celled, and the seeds solitary and two-celled.

Syst. Veget. p. 192. R.

ESSENTIAL CHARACTER.

Berry two-celled. Seeds solitary, two-celled. Stigma emarginate.

SPECIES.

1. *Ehretia tinifolia*. Tinus-leaved *Ehretia*.

Lin. spec. 274. syst. 230. Reich. i. 532. amœn.

5. 595. Swartz obs. 87. Jacq. amer. 45.

Trev. ehret. t. 24. Brown. jam. 168. t. 16. f. 1.

Sloan. jam. 2. 94. t. 203. f. 1. Raii dendr. 45. 12.

(*Cerafo* affinis).

Leaves oblong-ovate quite entire smooth, flowers panicled.

[2. *Ehretia spinosa*. Thorny *Ehretia*.

Lin. spec. 275. syst. 230. Reich. 532. Jacq.

amer. 46. t. 80. f. 18. pict. 27. t. 259. f. 14.

Thorny.]

3. *Ehretia Bourreria*. Oval-leaved *Ehretia*.

Lin. spec. 275. syst. 230. Reich. 533.

Cordia Bourreria. Lin. amœn. 5. 395.

Bourreria succulenta. Jacq. amer. 44. obs. 2. p. 2.

t. 26. amer. pict. 28. t. 45. Brown. jam. 168.

t. 15. f. 2. Comm. hort. 1. 153. t. 79. (*Mespilus*).

Cateb. car. 2. t. 79. (*Pittonia* similis). Sloan.

jam. 2. 96. t. 204. f. 1. Raii dendr. 63. 11.

(*Jasminum*).

Leaves ovate quite entire smooth, flowers in a kind of corymb, calyxes smooth.

[4. *Ehretia exsucca*. Dry-fruited *Ehretia*.

Lin. spec. 275. syst. 230. Reich. 533.

Bourreria exsucca. Jacq. amer. 45. t. 173. f. 17.

pict. 28. t. 259. f. 13.

Rhamnus cumanensis. Loeß. itin. 182. ^e

Leaves wedge-form-lanceolate with the edge reflex.

5. *Ehretia virgata*.

Swartz prodr. 47.

Leaves oblong entire rugged on the upper surface, branches filiform, flowers terminating scattered, calyxes hirsute.

DESCRIPTIONS, &c.

These are trees or shrubs; the leaves in some are smooth, in others scabrous; the flowers in panicles terminating and axillary^a.

1. This is an upright tree, from twenty to thirty feet high, with an oblong thick head. Branches unarmed, roundish, subdivided. Leaves alternate, veined, blunt, about four inches long, on short petioles. Panicles terminating, oblong, large. Flowers terminating, numerous, white, small. Calyx five-parted, with minute ovate segments. Corolla a little larger than the calyx, with acute segments finally rolled back. Filaments longer than the corolla. Style scarcely shorter than the stamens, awl-shaped, bifid. Stigmas simple. Berry spherical, at first yellow, then black. Seeds two, hemispherical, two-celled.

Native of Cuba and Jamaica; flowering there in January and February^b.

In Jamaica, where it is pretty common in the lower lands, and known by the name of *Bastard Cherry-tree*, it rises generally to the height of sixteen or twenty feet: the berries are small, and seldom exceed the largest of our European currants in size. They serve to feed poultry, and are sometimes eaten by the poorer sort of people^c.]

Mr. Miller received the seeds from Jamaica in 1734. The plants grew to the height of eight or nine feet, and produced flowers, but not seeds. He will not allow that it is Sloane's plant: the leaves in this being smoother, longer and more pointed,

^a Linn. suppl.

^b Hort. kew.

^c Swartz.

^d Linn.

^e Hort. kew.

^f Dillen.

^g Swartz.

^h Jussieu.

ⁱ Swartz and Jacquin.

^j Browne.

and the corymb of flowers much longer, than in Sloane's plant.

[2. This tree has a trunk three or four inches in diameter, dividing almost close to the ground usually in three parts, which run up twenty-five or thirty feet high: these having put out a few similar boughs in their progress, scarcely attain the length of ten feet before they are bowed back to the ground, and require support from the boughs of the neighbouring trees: they have many very short lateral branches scatteringly disposed: their bark is ash-coloured and smooth. Strong, woody, short, very thick, awl-shaped spines are scattered over the trunk, principal boughs, and secondary branches; the oldest of these frequently put forth from their middle a perpendicular leafy branchlet of the same length with themselves.

Leaves oblong, attenuated at the base, obtuse, entire, sometimes subrepand, shining, on short petioles, three or four inches long, uncertain in their number, but usually five or six from the same tubercle, falling off every year. Racemes short, subcorymbed, branched, supported by awl-shaped stipules, from the centre of the tubercles, not unfrequently coming out before the new leaves. Flowers very many, small, with yellowish corollas. The segments of the style may be regarded as a two-parted stigma, whence with a glass appears an opening to the germ itself. Fruit the size of a Pea and red.

Native of Carthagenia in New Spain, flowering in august, and bearing fruit in october. It is called there *Cacaracacara*, and differs much in habit from the preceding; they agree however in the flower, except in the calyx and style^d.

3. This is a small inelegant tree, having an adult habit, in Curaçao often above fifteen feet high, in Martinico seldom five. Trunk unequal, with a chinky bark. Branches very many, irregular. Leaves alternate, petioled, quite entire, various; obtuse, acute or emarginate; on rocks smooth, elsewhere rugged; differing in size; oblong, ovate, &c. Racemes corymbed, terminating. Flowers sweet. Corollas white, with roundish segments. Anthers oblong. Calyx in the fruit cloven. Berries shining, saffron or orange-coloured, pulpy, sweet, succulent, more quadrangular as they are larger; eaten by children and the natives^e.

Leaves exactly ovate, both surfaces smooth and level: the tube of the corolla is only the length of the calyx. This species is the connecting link between Ehretia and Cordia^f.

Native of the West Indies, growing from the crevices of rocks, where there is no soil.

According to Dr. P. Browne, it grows in the Savannas of Jamaica, it is there called *Poison-Berries*: the French name it *Bois cabril batard*. It seldom rises above fourteen or fifteen feet: the berries are of a saffron colour. Browne named it *Bourreria*, after Mr. Bourer, (or rather Beurer) an apothecary of Nuremberg, who was a great promoter of natural history.

Cultivated 1758, by Mr. Miller^g;] who received the seeds from Surinam.

[4. This is a small tree fifteen feet in height; sometimes erect, sometimes supporting itself on other trees. Leaves ovate, acute, very smooth, alternate, petioled, two inches long. Racemes branched, subcorymbed, subterminating. Flowers having a slight degree of sweetness, much larger than in the preceding ones. Corollas white, with heart-shaped segments. Anthers ovate and large. Berries green, four-cornered, slightly four-grooved, ending in a blunt point, without any pulp, becoming finally of a reddish black colour, dividing into four parts, with the seeds sticking in them, and continuing a long time on the tree.

Frequent about Carthagenia, in mountain woods,

^d Jacquin.

^e Ibid.

^f Hort. kew.

^g Linn. spec.

flowering from may to august, and ripening the seeds in october^h.

5. Native of Hispaniolaⁱ.]

PROPAGATION AND CULTURE.

These plants are too tender to thrive abroad in England, where they require a moderate warm stove in winter; but when the plants have acquired strength, they may be placed in the open air during the heat of the summer; but it should be in a sheltered situation; and when the evenings grow cold in the autumn, they must be removed into shelter.

They are propagated by seeds; when these can be obtained. Sow them in small pots, plunged into a hot-bed. They may also be increased by layers, but these are long before they put out roots.

[EHRETIA. See *Lycium*.

EHRHARTA. (So named in honour of Frederic Ehrhart, a native of Switzerland, a very diligent and acute observer. Lin. suppl.)

Lin. gen. Schreb. n. 608. Thunb. act. holm. 1779.

216. nov. gen. 16. Lin. fil. nov. gen. gram. 32.

suppl. 28. Smithic. ined. 1. t. 9. & 2. t. 32, 33.

Class. 6. 2. Hexandria Mon. f. Digynia.

GENERIC CHARACTER.

CAL. Glume one-flowered, two-valved, ovate, concave, shorter than the corolla, patulous: one valve a little larger than the other, and membranaceous.

COR. double: outer two-valved; valves oblong, complicate, keeled, retuse, transversely wrinkled, three times as long as the calyx, villose on the outside at the base: inner a little shorter, keeled, with a smooth even surface.

Nectary two-leaved, very small: leaflets jagged and ciliate, involving the genitals.

STAM. Filaments six, capillary, very short: anthers upright, linear, emarginate, shorter than the corolla.

PIST. Germ ovate. Style compressed, very short, smooth. Stigma simple, villose.

PER. none.

SEED single, ovate, smooth.

OBS. The two first species have one style, the three last have two: the third has only three stamens: in the fifth the flowers are only monoeous: in the third and fourth the nectary is not visible: the fourth and fifth have no villose hairs at the base of the outer corolla.

ESSENTIAL CHARACTER.

Cal. a two-valved one-flowered glume. Cor. double, each two-valved; the outer compressed.

SPECIES.

1. Ehrharta cartilaginea.

Smithic. ined. 2. 33.

E. capensis. Thunb. act. holm. 1779. 216. t. 8.

E. Mnemateia. Lin. suppl. 209.

Culm undivided, panicle simple, outer corolla retuse almost awnless, edge of the leaves cartilaginous and curled.

2. Ehrharta bulbosa.

Smithic. ined. 2. 33.

Trochera striata. Richard journ. de Rosier, V. 13. p. 225. t. 3.

Culm undivided, panicle branched many-flowered, outer corolla retuse awned.

3. Ehrharta longiflora.

Smithic. ined. 2. t. 32.

Culm simple, panicle branched many-flowered, outer corolla mucronate tubercled and hispid, flowers three-flowered.

4. Ehrharta panicæa.

Smithic. ined. 1. t. 9.

E. erecta. Lamarck encycl. V. 2.

Culm divided, panicle somewhat branched, flowers erect two-styled.

5. Ehrharta calycina.

Smithic. ined. 2. t. 33.

Aira capensis. Linn. suppl. 108.

Culm branched, panicle almost simple, calyx coloured equalling the corolla.

^h Jacquin.

ⁱ Swartz.

1. This is an extremely beautiful smooth grass.—
Root fibrous, perennial. *Culm* erect, jointed, from a foot and half to two feet high: joints about five. *Leaves* sheathing, ensiform; the lower ones a hand in length, the upper ones much shorter: disk smooth; edge cartilaginous and crenulate, scabrous. *Panicle* oblong, consisting of fifteen or twenty flowers: peduncles capillary, loose, flexuose, in threes, pairs or solitary, simple or sometimes a little branched, growing thicker at the top. Flowers drooping; calycine glume coloured at the base, outer corolline glume violet, inner becoming pale. Bundles of villose hairs very white and shining. Nectary and filaments white. Anthers yellow.—First observed at the Cape by Thunberg^a.

2. Lamarck confounds this with the foregoing species, from which it is very distinct^b.

3. *Root* fibrous, whitish. *Culms* many, erect, jointed, leafy, round, streaked, very smooth. *Leaves* sheathing, linear-lanceolate, acute, nerved, streaked, smooth except about the edge, where it is scabrous: *Sheath* often the length of a joint, streaked, smooth, somewhat swelled, contracted at top, and bearing a *stipule*, which is solitary, intrafoliaceous, erect, short, multifid and jagged, brown. *Panicle* terminating, erect: branches crowded, more or less subdivided, smooth. *Peduncles* crowded or solitary, simple or divided, capillary, straight, scabrous, thicker at the tip. *Flowers* upright, large, hermaphrodite, three-stamened: valves of the calyx keeled, much shorter than the corolla, nerved, shining, purplish, awnless; the outer ovate, acute, with seven nerves, the inner roundish, obtuse with a dagger-point, and five-nerved: corolla pale green; the outer very long, straight, the valves nearly equal and prismatic, smooth at the base, or very seldom obscurely wrinkled between the angles, towards the tip tubercled and hispid, dagger-pointed and pungent; the outer valve obovate, with a bundle of whitish villose hairs at the back of the base; the inner placed above the other, embracing the inner corolla, ovate, cut at the base and adorned there with a bundle of villose hairs on each side; the inner corolla opposite not contrary to the outer, much shorter, awnless, smooth; the outer valve ovate, closely compressed, sharp, nerved, the inner much narrower, linear-lanceolate, membranaceous, with one or two keels along the back. Nectary none. Filaments very slender, equal: anthers ovate, bifid both at the tip and base, two-celled; as the germ increases they are torn from the filaments and raised on the styles to the top of the flower. Germ oval, compressed, smooth: styles two, upright: stigmas crinite, whitish. Seed oval, naked. Observed at the Cape by Masson^c.

4. *Culm* somewhat branched, kneed, leafy. *Leaves* sheathing, ensiform, streaked, naked, scabrous about the edge. *Peduncles* capillary, straight, thickening at the end. *Flowers* three times smaller than in the first species, green: calyx scarious about the edge, the outer valve larger: corolla awnless, twice as long as the calyx; the outer more rude, acinaciform, valves nearly equal, triangular, the outer valve of an even surface not wrinkled, the inner cut out at the base, transversely wrinkled at the base, no villose hairs; inner corolla contrary to the outer, valves very smooth, nearly equal, the outer a little broader, embracing the inner. Nectary very minute, if any? Filaments equal: anthers two-lobed at the tip, the lobes divaricate. Germ very small, smooth: style bifid, with two pencilform stigmas. Seed naked. Though the style appears to be single at the base, yet it has two stigmas, as in the Grasses and Oryza (Rice), after which it should be placed, since it has a great affinity with it.—Sonnerat brought it from the Cape in the year 1776^d.

5. *Culm* very much branched, kneed, round, streaked, smooth: branches alternate. *Leaves* sharp, very slightly pubescent underneath, subciliate about

the edge: sheath a little shorter than the internode, streaked, contracted at the top, and bearing a stipule, which is solitary, intrafoliaceous, upright, multifid-capillary, white, ending on both sides in a membranaceous, half-mooned, horizontal, brown process, ciliated with white bristly hairs, and embracing the stem. *Peduncles* usually in fours, one-flowered (very seldom two-flowered,) capillary, straight, thickening at the tip, mostly pointing one way. *Flowers* the same size as in the fourth species, upright, monoecous: valves of the calyx keeled, nearly equal, the length of the corolla, somewhat scabrous, streaked, awnless, green at the base and on the back, coloured at the tip and about the edge red or white; the inner ovate, the outer a little narrower, and linear: corolla awnless, green, the surface flat and not wrinkled; the outer unequal, hairy on the outside, the valves somewhat distant; the outer valve shorter, much narrower, linear, obtuse with a point, but not mucronate or dagger-pointed, the inner ovate, obtuse, compressed at the tip, somewhat scabrous, equal at the base, and not manifestly cut out there, embracing the inner corolla, there are no villose hairs at the base; the inner corolla equal, contrary to the outer, and smooth, the valves ovate-lanceolate, hollow, converging, closely connected at one edge, cherishing the genitals. Two white, entire, rounded little membranes, between the calyx and the corolla, form the *nectary*. *Filaments* equal: anthers much larger than in the foregoing species, filling almost the whole cavity of the inner corolla, and at length standing forth. There is no rudiment of a pistil in the male flower. Pistil in a separate flower: germ oval, small, smooth, surrounded with a few long, white bristles, which perhaps are barren filaments; styles two, short, patulous, white; stigmas crinite, brown, standing forth on one side of the flower between the inner corolla and the inner valve of the outer. Seed naked.—Brought from the Cape by Sparrman^e.

EKEBERGIA.

Lin. gen. Schreb. n. 719. Sparrm. act. holm. 1779. p. 282. Thunb. nov. gen. 43. Juss. 265.

Class. 10. 1. Decandria. Monogynia. (Monadelphia? Retz.)

Nat. order of Tribilatae. Meliæ Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, bell-shaped, tomentose, four-parted: *divisions* ovate, obtuse.

COR. Petals four, oblong, obtuse, tomentose on the outside, a little longer than the calyx.

Nectary: a ring surrounding the base of the germ.

STAM. Filaments ten, very short, pubescent. *Anthers* ovate, acute, upright.

PIST. Germ superior. *Style* cylindric, very short. *Stigma* capitate.

PER. a globular berry.

SEEDS five, oblong.

OBS. The number of seeds varies from two to five.

Thunb.—Doubtful whether the corolla be four-petalled and ten-stamened. Compare it with *Guaræa*, Juss.—Perhaps it should be referred to the class *Monadelphia*. Retz.

ESSENTIAL CHARACTER.

Cal. four-parted. *Petals* four. *Nect.* like a garland surrounding the germ. *Berry* containing five oblong seeds.

SPECIES.

1. *Ekebergia capensis*.

Lin. syst. 399. Sparrm. in act. holm. 1779. t. 9. Thunb. nov. gen. 44.

DESCRIPTION, &c.

A tree, with abruptly or unequally pinnate leaves, the common petiole flattened; the flowers panicled and axillary^f.

ELA CALLI. See *Euphorbia*.

ELÆAGNUS *Burm.* See *Elæagnus*.]

^a Linn. suppl. ^b Smith. ^c Ibid. ^d Ibid.

^e Smith. ^f Jussieu.

ELÆAGNUS. (Ελαίαννος of Theophrastus. From Ελαία, the Olive, and ἄγνος, chaste; or a shrub so called from its supposed quality of preserving chastity.)

Engl. Oleaster. Fr. Le Châleuf.

Lin. gen. n. 159. Reich. 168. Schreb. 213.

Tourn. 489. Juss. 75.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of Elæagni Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, four-cleft, superior, straight, bell-form, outwardly scabrous, inwardly coloured, deciduous.

COR. none.

STAM. Filaments four, very short, inserted into the calyx below the divisions. Anthers oblong, incumbent.

PIST. Germ roundish, inferior. Style simple, a little shorter than the calyx. Stigma simple.

PER. Drupe ovate, obtuse, smooth, with a dotted tip.

SEED. Nut oblong, obtuse.

ESSENTIAL CHARACTER.

Cor. none. Cal. four-cleft, bell-form, superior. Drupe below the calyx,

SPECIES.

1. Elæagnus angustifolia. Narrow-leaved Oleaster.
Lin. spec. 176. Reich. 1. 343. hort. upf. 31. cliff. 33. Hort. angl. t. 19. Camer. epit. 106. Dubam. arb. 1. t. 89.
E. inermis. Mill. dict. n. 2.
Elæagnus angustifolia. Pallas fl. ross. 1. 10. t. 4.
Olea sylvestris, fol. molli incano. Bauh. pin. 472. Raii hist. 1576.
Oleaster cappadocicus. Park. theat. 1441.
Zizyphus cappadocica. Ger. emac. 1491. f. 2.
β. E. spinosa. Mill. dict. n. 1.
Leaves lanceolate.
- [2. Elæagnus orientalis. Oriental Oleaster.
Lin. syst. 163. Reich. 343. mant. 41.
E. spinosa. Lin. spec. 177. amæn. 4. 305.
Elæagnus orientalis. Pallas ross. 1. 11. t. 5.
Leaves oblong ovate opaque.]
3. Elæagnus latifolia. Broad-leaved Oleaster.
Lin. spec. 177. Reich. 343. fl. zeyl. 58. Burm. zeyl. 92. t. 39. f. 2. Raii dendr. 44. n. 4. (Zizyphus). Lour. cochinch. 89.
Leaves ovate.
- [4. Elæagnus crispa. Curled-leaved Oleaster.
Lin. syst. 163. Thunb. jap. 66.
Leaves lanceolate-oblong obtuse waved, flowers solitary.]
5. Elæagnus multiflora. Many-flowered Oleaster.
Lin. syst. 163. Thunb. jap. 66.
Leaves obovate obtuse, flowers axillary aggregate, peduncles longer than the flower.
6. Elæagnus umbellata. Umbelled Oleaster.
Lin. syst. 164. Thunb. jap. 66. t. 14.
Leaves obovate obtuse, flowers axillary, aggregate, peduncles shorter than the flower.
7. Elæagnus glabra. Smooth-leaved Oleaster.
Lin. syst. 164. Thunb. jap. 67.
Leaves ovate-oblong acuminate, flowers axillary solitary.
8. Elæagnus macrophylla. Silver-leaved Oleaster.
Thunb. jap. 67. Kämpf. amæn. v. 789.
Leaves rounded-ovate silvery.
9. Elæagnus pungens.
Lin. syst. 164. Thunb. jap. 68. Kämpf. amæn. v. 789.
Branchlets becoming thorns, leaves oblong waved, flowers axillary in pairs.]

DESCRIPTIONS, &c.

1. A tree branching from the bottom, growing sometimes to the height of three fathoms, with a trunk the thickness of a man's arm or thigh, elegant in its appearance, especially from the silvery brightness of the leaves. Bark smooth, brown. Wood pale, prettily veined with gray and brown, but not hard. Branches and branchlets slender, frequent, alternate, smooth, unarmed, or having thorns especially in young trees. Leaves petioled, in the more northern parts lanceolate, in the more southern broader, rather obtuse, and larger; silvery white

underneath, on their upper surface hoary-greenish, and shining very much. The flowers come out at the middle leaves of the smaller branches, usually solitary or two together, sometimes but very seldom three from each axil, in which case one or two are on shorter peduncles and barren, having no germ, though they have a style and anthers. The divisions of the calyx (or corolla) are four, very seldom five, never more in the wild plant, (others say from four to eight): the anthers are placed at the base of these, on very short filaments. Style the length of the calyx. Drupe always solitary, oblong, hoary-white when young, thicker and yellowish when ripe, inclosing within a sweet pulp a woody, gray, furrowed nut. In the deserts near the Volga the fruit is hardly bigger than the berries of the Barberry, whereas in the more southern parts it is the size of the cornelian Cherry^a.

Native of the South of Europe, the Levant, near the Caspian sea, in the deserts near the Volga, and the farther Tartarian desert, and other parts of the Russian empire in Asia. It flowers there in may.—It was cultivated by Parkinson in 1633^b.]

β. Mr. Miller distinguishes specifically the thorny and unarmed narrow-leaved Oleaster. The latter he says, is that which is most commonly preserved in the English gardens. The leaves are more than four inches long, and not half an inch broad; they are very soft, and have a shining appearance like satin. The flowers come out at the footstalks of the leaves, singly, or two, and frequently three at the same place; the outside of the calyx is silvery and studded, the inside of a pale yellow; it has a very strong scent. The flowers appear in july, and sometimes are succeeded by fruit.

The thorny Elæagnus he takes to be the common sort, which grows naturally in Bohemia, and of which he saw some trees in the curious garden of the famous Boerhaave, near Leyden. The leaves of this are not more than two inches long, and about three quarters of an inch broad in the middle; they are white, and have a soft cottony down on their surface; at the footstalk of every leaf comes out a pretty long sharp thorn, the leaves being alternate, the spines come out on each side of the branches. The flowers are small, and have a strong scent when fully open. They were both observed by Tournefort in the Levant.

[2. This has the appearance of the foregoing, but the leaves are twice as broad, ovate-oblongish, soft to the touch on both sides, pale underneath, but neither surface shining or silvery^c.

In stature and manner of growth this tree resembles a middle-sized Willow, as it does also in the hoariness of its leaves and the division of its branches. Bark gray, and cloven in the trunk. Small branches alternate, all white-tomentose. Leaves alternate, oblong-ovate and oval, quite entire, petioled, with a snowy hoariness underneath, and dotted-hoary on the upper surface, not shining, but soft. In the wild specimens from Persia, sharp, straight thorns are scattered variously over the branches, on the smaller twigs they are hoary all over and bear leaves: whereas the cultivated trees have no thorns. Flowers alternate, peduncled, solitary, extremely fragrant: calyx funnel-form, hoary on the outside, the divisions become reflex by age, and are obscurely yellowish within. Stamens between these divisions. Germ oblong; style the length of the calyx. Drupe ovate, very obscurely octangular, tomentose: nut furrowed with a cylindrical kernel.—This and the *spinosa* of Linneus do not seem to differ any otherwise than a garden tree does from a wild one, or the thorny variety of the foregoing species from the unarmed.

Native of the mountains of Persia from Caucasus to Derbent, about the Caspian sea abundantly, &c.^d and of the Levant. Introduced in 1783, by Mr. John Græffer^e.]

^a Pallas.

^b Hort. kew. from Ger. emac.

^c Linn. mant.

^d Pallas.

^e Hort. kew.

3. This rises with a woody stem to the height of eight or nine feet, dividing into many branches. Leaves silvery, with several irregular dark-coloured spots; they are alternate, and continue all the year.

[Root tuberous[†]. Stem shrubby, erect, three feet high, unarmed, branched. Leaves quite entire, tomentose. Flowers lateral, white, on one-flowered peduncles, several together. Drupe small ovate, containing one seed[‡].

Native of the East Indies and China.]

Mr. Miller says, that it is rare at present in the English gardens; but that there were several large plants of it in the royal garden at Hampton-court, some of which produced flowers.

[4. An upright tree; branches and branchlets alternate, round, divaricate, upright, ash-coloured, scabrous with dots, the last twigs angular and whitish. Leaves alternate, petioled, entire; above naked, brownish, dotted with a middle longitudinal furrow; silvery underneath; from erect patulous, an inch and half in length: petiole furrowed above, scarcely a line long. Flowers not in the axils, but scattered over the last twigs, solitary and peduncled. Peduncle capillary, shorter than the flower.

5. Stem shrubby, little branched; branches and branchlets alternate, few, round, ferruginous-brown, spreading, scabrous with dots. Leaves from each bud many, alternate, petioled, entire, upright; above half naked with scaly silver dots, wholly covered with silvery scales underneath; unequal, about an inch in length: petioles capillary, a line in length. Flowers many, peduncled from a bud among the leaves. Peduncles capillary, loose, silvery, about an inch long. Calyx club-shaped, oblong.

6. Stem shrubby; branches and branchlets alternate, round, upright, ferruginous-brownish, scabrous with dots. Leaves from alternate buds many, petioled, patulous; rather naked above with silvery dots; underneath silvered all over; half an inch in length: petioles capillary, scarcely a line long. Flowers many from a bud among the leaves, in a kind of umbel, peduncled, drooping: peduncles capillary, nodding, scarcely a line in length. Calyx ovate. This approaches very near to the foregoing species.

7. Stem arborescent. Branches roundish, almost naked, brown: branchlets angular, reddish-ash coloured, scabrous with dots, alternate, from erect patulous. Leaves alternate, petioled, entire, from spreading erect; above green, smooth; underneath reddish-scaly with ferruginous dots interspersed, an inch and half in length: petioles semi-cylindric, channelled above, half an inch long. Flowers axillary, solitary or in pairs, peduncled, upright. Peduncle shorter than the flower, capillary.

8. An upright thornless tree; branches round, streaked, tubercled with the deciduous branchlets, ash-coloured, scabrous with dots, upright; branchlets angular, alternate, like the branches. Leaves alternate, petioled, entire, from erect patulous; above smooth, green, beneath silvery; an inch in length: petioles semi-cylindric, above channelled, upright, half an inch long. Flowers axillary, aggregate, peduncled, almost upright: peduncles four or more, the length of the flower. It differs from *E. orientalis* in having rounded-ovate leaves, silvery underneath; from *E. latifolia* in having the leaves more rounded, and the branchlets not being spinose or becoming thorns.

9. An upright tree; a fathom in height, with a brown scabrous bark. Branches round, like the trunk, flexuose, leafless, spreading; branchlets alternate, like the branches, leafy, stiff, spinose at the end, the extreme ones axillary, spinose, very short, leafless. Leaves alternate, petioled, somewhat obtuse, entire; above smooth, green, beneath silvery with scales interspersed with ferruginous dots, from reflex spreading, an inch long, stiff: petiole half an inch in length. Flowers in the

axils of the leaves, about two, distinct, upright: pedicels shorter than the flower.—It differs from *E. spinosa*, which Pallas thinks is only a variety of *E. orientalis*, in the branchlets becoming thorns; in the leaves being oblong and broader; the flowers two or three and larger.

This and the five foregoing species are natives of Japan[§].]

PROPAGATION AND CULTURE.

1. The first sort is extremely hardy, and is not injured by frost: it is not however of very long duration: young plants therefore should be raised once in three or four years, by seeds or layers.

[2. Requires the protection of a greenhouse.]

3. This sort requires a warm stove to preserve it in this country; for it is too tender to live in the open air, except for a short time in the warmest part of the summer. It may be raised from seeds.

[The other species have not yet been introduced into cultivation in Europe.

ELÆAGRUS. See *Elæagnus*.

ELÆIS. (So named by Jacquin, from *Ελαία*, the Olive, on account of the oiliness of the nuts.)

Lin. gen. Reich. n. 1340. Schreb. 1695. Jacq. amer. 280. Gært. t. 6. Juss. 38.

Appendix Palmæ.—Dioecia Hexandria. Thunb. Nat. order of Palms.

GENERIC CHARACTER.

* Male.

CAL. Perianth six-leaved: leaflets concave, upright.

COR. one-petalled, six-cleft, upright, sharp, length of the calyx.

STAM. Filaments six, subulate, length of the corolla. Anthers oblong, sharp.

* Female.

CAL. as in the male, (nine-leaved, with the inner leaflets longer, G.)

COR. six-petalled, (none, unless a part of the calyx be considered as such, G.)

PIST. Germ ovate, (three-celled, G.) Style thickish, (three-cornered, G.) Stigmas three, reflex.

PER. Drupe fibrous, ovate, somewhat angulated, oily, (superior, berried, one-celled, G.)

SEED. Nut ovate, obscurely three-sided, with three holes, three valved, (valveless, G.) one celled.

ESSENTIAL CHARACTER.

MALE. Cal six-leaved. Cor. six-cleft. Stam. six.

FEM. Cal. six-leaved, (nine-leaved, with the inner leaflets longer, G.) Cor. six-petalled, (none, G.) Stigmas three. Drupe fibrous. Nut one to three-valved, (valveless, G.)

SPECIES.

1. *Elæis guineensis*.

Lin. syst. 985. Reich. 4. 635. mant. 137. Jacq. amer. 280. t. 172. pi. 136. t. 257. Gært. fruct. 17. Sloan. jam. 113. t. 214. Brown. jam. 344. 7?

Nucula indica secunda. Clus. cur. post. 85. c. ic.]

Palma oleosa. Mill. dict. n. 6.

DESCRIPTION, &c.

[Trunk erect, irregular from the stipes of the fronds, which continue a long time, and are longer the nearer they are to the frond. Fronds pinnate, with a rigid rib (or rachis) fifteen feet in length, for four feet below the leaflets armed at the edge on both sides with awl-shaped spines, the uppermost hooked and bowed back, the middle ones straight, the lowest patulous and twice as long as the rest: leaflets sword-shaped, acute, unarmed, folded back at the base, a foot and half long, and an inch broad. After these have fallen the rigid rib remains some time and resembles a spine. Spadix axillary, a foot long, much compressed, erect, divided into about fifty branchlets, five inches long, erect, the thickness of a finger, compactly spiked, imbricate and irregularly disposed, with triangular acuminate tips. The branchlets, except the tip, are wholly covered with small flowers, each having a small roundish bracte at the base, the lowest on each branchlet being much larger than the others, with

[†] Linn. zeyl.

[‡] Loureiro.

[§] Thunberg.

a lanceolate point. The flowers have a singular and very strong smell, like Anise seeds mixed with Chervil leaves. Fruit larger than a pigeon's egg; the pericarp variegated with yellow, black and red, and so full of oil as to run out on being very slightly pressed. Nut black, with longitudinal interrupted whitish streaks*. Gærtner describes the fruit as a berried drupe, ovate, smooth and yellowish, with a thin rind, and a thick, oily, fibrose pulp, the fibres stiffish, and adhering very closely to the shell; which is ovate, contracted above, and has at bottom three holes, one pervious and two blind; it is obscurely three-cornered, wrinkled, stony, thick, of a yellow ochrous colour. Seed globosely conical, umbilicate beneath with an immersed nipple in the middle, netted with depressed bowed streaks, bay-coloured or cinereous-brown. The drupe varies in size and form, some being like a small pear, others like a plum, others again ovate-oblong and attenuated at both ends, and some not larger than a Spanish olive.]

Mr. Miller says, that the leaflets are long, narrow, and not so stiff as most of the Palms; that the foot-stalks of the leaves are broad at their base, where they embrace the stem, diminish gradually upwards, and are armed with strong, blunt, yellowish thorns, which are largest at their base. The flowers come out at the top of the stem among the leaves; some bunches have only male flowers, others female; the latter are succeeded by oval berries, bigger than the largest Spanish olives, but of the same shape; they grow in very large bunches, and when ripe are of a yellowish colour.

From this fruit the inhabitants of the West India islands draw an oil, in the same manner as it is extracted from olives. They also extract a liquor from the body of the tree, which when fermented has a vinous quality, and will enebriate. The leaves are wrought by the negroes into mats, on which they repose.

It is called in the West Indies the Oily Palm, and by some Negroes Oil; the fruit of this tree having been first carried from Africa to America by the Negroes. It grows in great plenty on the coast of Guinea, and also in the Cape de Verd Islands, but was not in any of our American colonies, till it was carried there by the Negroes, who now propagate it in great plenty.—[Jacquin also says that he has never seen this tree wild in America, and that the French call it *Palmier*.

Gærtner has set down another *Elæis*, which he names *melanococca*, from the blackness of the nuts. He thinks it may possibly be no more than a variety: the shell however is much smaller, and not so much bellied, but rather oblong, and suddenly contracted at the tip into an oblique dagger-point; it is also thinner, and elegantly variegated on the outside with testaceous streaks, irregularly confluent, with other alternate streaks like the others, but of a coal black; when broken it appears of a footy black colour. The seed is ovate-oblong and brown.

Jacquin also mentions another very thorny Palm, which has somewhat of the same habit with *Elæis guineensis*, and is called in Martinico *Grigri*. The fruit is eatable, of an acid flavour, globular slightly depressed, acuminate by means of the style, scarlet and shining. The pulp is small, red, soft and not fibrous, surrounded by a very thin pellicle. Nut brown, with three obscure holes, from which run lines in a stellate order like veins over the whole surface. Kernel cartilaginous and hollow. The fruit is figured in amer. pict. t. 263. f. 89.

Another Palm occurs about Carthage, called by the natives *Corozo*. They make both an oil and a butter of the fruit for domestic uses. The pericarp is shining and yellow on the outside, supported by a three-leaved calyx and a three-petalled corolla, permanent and shining; it is but little fibrose, not thick, and contains a pleasant oil. Its form is ovate-obscurely three-cornered. Nut black and shining,

* Jacquin.

of the same form, with three obscure holes at the base. Kernel roundish, cartilaginous, very hard, solid, with the centre slightly cloven. The fruit of this is also figured in amer. pict. t. 263. f. 90.

Linneus (in mant.) refers to the third Palm of Miller, which is the Macaw-tree of the West Indies. See *Baobab* and *Cocos*.

PROPAGATION AND CULTURE.

It must constantly be kept in the bark-stove, otherwise it will not make any great progress. In about twenty years it will be too tall for most of our stoves. It is propagated by seeds, for the sowing and management of which see *Palms* and *Phoenix*.

ELÆOCARPUS. (From *Elæis* Olive, and *Karpus*, fruit.)

Lin. gen. n. 663. Reich. 719. Schreb. 898.

Burm. Retz. obs. 4. 27. Gærtner. t. 43. Juss. 258.

Class. 13. 1. Polyandria Monogynia.

Nat. order of *Guttiferae*. Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, spreading, permanent, five-parted: leaflets linear-lanceolate, concave, sharp.

COR. Petals five, with claws; multifid-laciniate, the extreme jags capillary, equal, scarcely longer than the calyx, inserted at the base of the nectary.

STAM. Filaments twenty to thirty, capillary, very slender, short, inserted into the nectary. Anthers shorter than the corolla, upright, linear, scabrous, two-valved at the tip; valves spreading, with about five ciliate hairs, very slender, from reflex expanding, unequal.

PIST. Germ somewhat globular, villose, sitting on the nectary. Style filiform, longer than the stamens. Stigma sharp.

PER. Drupe oblong, of a smooth even surface.

SEED. Nut oblong, grooved and tubercled; shell subtrivalvular; kernel subtrigonal.

OBS. Number of the divisions in the calyx and petals frequently three: but of the primary divisions in each petal three to five. Stamens eight to twenty, twenty-five, and twenty-seven.—E. copallifera Retz. very different: doubtful whether it be of this genus.

ESSENTIAL CHARACTER.

Cal. five-leaved (or one-leaved, five-parted.) Cor. five-petalled, jagged. Anthers two-valved at the tip. Drupe with a curled shell.

SPECIES.

1. *Elæocarpus ferratus*.

Lin. spec. 734. Vahl symb. 3. 67.

Leaves alternate lanceolate-elliptic ferrate, racemes axillary.

2. *Elæocarpus dentatus*.

Vahl symb. 3. 67.

E. ferratus. Lin. suppl. 266.

Dicera dentata. Forst. gen. 80: which see.

Leaves alternate oblong tooth-ferrate at top, racemes axillary, flowers one-styled.

3. *Elæocarpus Dicera*.

Lin. suppl. 266. Vahl symb. 3. 67.

Dicera ferrata. Forst. gen. 80: which see.

Leaves opposite ovate doubly-ferrate, racemes compound, flowers four-styled.

4. *Elæocarpus copalliferus*.

Retz. obs. 4. 27. n. 85. Vahl symb. 3. 67. Rheed.

mal. 4. 33. t. 15. (Pænoc.)

Vateria indica. Lin. syst. 494.

Leaves quite entire, panicle terminating.

5. *Elæocarpus integerrimus*.

Lour. cochinch. 338.

Leaves lanceolate quite entire, flowers heaped axillary.

6. *Elæocarpus oblongus*.

Gærtner. fruct. 202. Rumph. amb. 3. 161. t. 102.

DESCRIPTIONS, &c.

1. Branches round, warted, smooth. Leaves petioled, three inches long, bluntly-ferrate, smooth, nerved and veined. Racemes axillary; flowers distant. Linneus observes, that they are simple, loose, solitary, the length of the leaves, which have a double gland at their base. According to

* Vahl. ° Fl. zeyl.

Retzius, the calyx has three, four or five sharp keeled divisions; and the corolla has three petals, cut in tripartite divisions; the stamens twenty-five, with anthers terminating in cirrhone threads, and the germ very tomentose^d. Linneus affirms, that there are twenty stamens in the Ceylone plant, eight in that from Java, and sixteen in Burman's^e; who says however that there are sixteen when there are four divisions of the calyx, and twenty when there are five. The description under *Dicera dentata* belongs to this species.

2. Branches round, dotted, smooth, with pubescent branchlets. Leaves petioled, two inches long, sharp at the base, smooth on both sides, except on the midrib, nerved above, somewhat veined underneath. Petioles villose^f.

This is a native of the islands of the South Seas; and the preceding of several parts of the East Indies. The two species have been confounded.

3. Branches round, a little compressed at top. Leaves petioled, smooth, veined at top, two inches long. Racemes three inches long, erect^g. According to Linneus's supplement, it corresponds with the preceding in the structure of the flower; but it differs in having four styles, a berried four-celled fruit, and two seeds in each cell. See *Dicera serrata*.

4. Leaves large, ovate, coriaceous, very entire, with transverse nerves. Flowers in panicles. Calyx superior, the divisions linear-oblong, obtuse, tomentose on both sides. Petals longer than the calyx, ovate, entire. Stamens forty or more: anthers filiform at the tip. Germ conic, streaked, tomentose: style angular. Fruit a conic, fleshy, resinous, one-celled pome.—The long linear anthers terminated by cirrhone threads seem to furnish a better character than the torn petals.—It yields the copal resin, but of this there are several sorts^h.

It is thus described by Vahl.—This is a lofty tree, with round branches, mealy-tomentose at top, and ferruginous. Leaves petioled, alternate, half a foot long and more, lanceolate, acuminate, rounded at the base, almost three inches broad, subcoriaceous, smooth on both sides, above very finely marked with lines along the nerves, and with more obscure oblique lines between the nerves, beneath having protuberant, alternate nerves. Petioles two inches long, round, thicker towards the leaf, mealy-villose. Panicle a foot long, spreading, mealy tomentose: partial peduncles roundish, alternate. Flowers on the outmost branches of the panicle, racemed, nodding. Calyx tomentose, hoary: segments obtuse, villose within, hoary, subcoriaceous. Petals oblong, smooth, coriaceous, quite entire. Filaments scarcely any: anthers numerous, awl-shaped, with a groove on each side, whitish, divided at top into two bristles, shorter than the corolla. Germ superior, conical, one-third of the length of the corolla, hairy, grooved and angular: style filiform, smooth. Drupe cylindric, two inches long, the thickness of the thumb, ferruginous and mealy, sharp at the tip, and very blunt at the base.

Vahl observes, that *Vateria* of Linneus agrees with *Elæocarpus* in the calyx, corolla, anthers, and fruit; and that they are the same, appears from the specimen in Herman's herbarium. He does not find that the calyx is superior, as Retzius affirms it to be.

Native of the East Indies.

5. This is a middle-sized tree, with spreading branches. Leaves smooth, petioled, alternate. Flowers many, golden, sweet-smelling. Calyx five-leaved, with lax leaflets. Petals lacerated, longer than the calyx. Germs ten, roundish, minute, placed round the base of the style. Drupe small, black, subovate, subacute, ripening singly, the rest of the germs proving abortive.—Native of Cochin-China, where it is also cultivated on account of the sweetness and beauty of the flowersⁱ.

6. Drupe berried, superior, ovate-oblong or sub-cylindric, smooth, covered with a soft fleshy bark; shell stony, oblong, muricate and curled, with irregular tubercles; having three spurious futures never opening, one-celled, testaceous. Seed oblong, attenuated to both ends, obscurely three-cornered, ferruginous^k.

Native of the East Indies.

ELÆODENDRUM. (*Olive-wood*; from *elata* and *dendron*, a tree.)

Fr. *Bois d'Olive*.

Lin. gen. Schreb. n. 385. Jacq. fil. æt. belv.

9. 36. Jacq. var. t. 48. Gært. t. 57.

Class. 5. 1. Pentandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets roundish, blunt, concave, spreading very much, small, permanent.

COR. Petals five, roundish, blunt, concave, spreading very much, twice as long as the calyx.

STAM. Filaments five, subulate, bent back, arising from a gland beneath the germ. Anthers roundish, erect.

PIST. Germ roundish, conical, placed on a gland. Style conical. Stigma obtuse bifid.

PER. Drupe ovate, obtuse.

SEED. Nut ovate; shell thick and very hard; two-celled. Kernels oblong, compressed.

ESSENTIAL CHARACTER.

Cor. five-petalled. Drupe ovate, with a two-celled nut.

SPECIES.

1. *Elæodendrum orientale*.

Lin. syst. 241. Jacq. icon. rar. 1. t. 48.

E. indicum. Gært. fruct. 1. 274?

2. *Elæodendrum Argan*.

Retz. obs. 6. 26. n. 29.

Branches spiny, leaves ovate obtuse.

DESCRIPTIONS, &c.

1. A moderate sized twiggy shrub or tree, a native of the Oriental regions; with the leaves ovate-lanceolate, smooth, sometimes slightly waved, and sometimes even a little inclining to a subserrated appearance on the upper parts of the shoots. Flowers borne towards the ends of the branches, standing by twos and threes; of a pale green colour, supported on shortish pedicels, each of which springs from a somewhat longer common pedicel. The lower shoots, or those nearest the ground, appear to be somewhat procumbent, and have narrower and longer leaves in proportion than the upper ones; the nerves or midribs of these leaves are also of a reddish colour^l.

2. This is a middle-sized tree, with short thickish spines at the ends of the branches. Leaves solitary and in bundles, an inch long, petioled, quite entire, coriaceous: others decrease towards the petiole, so as to be almost spatulate. Flowers in the axils of the leaves and spines, heaped, sessile. Calyx inferior; leaflets a little unequal, hirsute and brown on the outside, with the edges smooth and whitish. Petals half-ovate, entire, greenish with white edges. Filaments longer than the corolla, compressed, fastened to the base of the petals. Anthers ovate. Germ from an ovate base conical, hairy, terminated by a style the length of the stamens and a simple stigma. Drupe dry. Nut very hard and smooth, pale brown, divided longitudinally by a white line; and having a single kernel in each cell.—The calyx and style abide after the petals are fallen, but are wanting in the fruit. One of the cells in the nut is generally abortive. It is called *Argan* by the Moors, who express an oil from the fruit, which the Europeans use in a variety of works, and the Moors for the table.

Native of the woods of Morocco, whence it was sent to Retzius by Professor Schulten^m.

ELAIOCARPOS. See *Elæocarpus* and *Dicera*.

ELAIS. See *Elais*.

ELAPHRIUM. See *Fagara*.

^d Retz. obs. 4. p. 27. n. 86.

^e Fl. zeyl.

^f Vahl.

^g Ibid.

^h Retz.

ⁱ Loureiro,

^k Gært.

^l Jacquin,

^m Retz.

ELATE. (So named *παρα το ελαν*, from its great height, *Ελατη ουρανομήκης* Homer. Supposed to be a Fir. It is however put for a Palm, or perhaps rather the fruit or spathe of a Palm, in Galen and Dioscorides.)

Lin. gen. Reich. n. 1342. Schreb. n. 1697. Juss. 38.

Append. Palmæ.—Monoecia Triandria. Thunb. Nat. Order of Palms.

GENERIC CHARACTER.

* Male flowers.

CAL. Spathe two-valved. Spadix branching.

COR. Petals three, roundish.

STAM. Filaments three, simple. Anthers adnate.

* Female flowers in the same Spadix with the males.

CAL. Spathe common with the males.

COR. Petals three, roundish, permanent:

PIST. Germ roundish. Style subulate. Stigma sharp.

PER. Drupe ovate, acuminate.

SEED. Nut ovate, grooved.

ESSENTIAL CHARACTER.

MALE. Cal. three-toothed. Cor. three-petalled. Anthers fix, sessile.

FEM. Cal. one-leaved. Cor. three-petalled. Pist. one. Stigmas three. Drupe one-seeded.

SPECIES.

1. *Elate sylvestris*. Prickly-leaved *Elate*.

Lin. spec. 1659. Reich. 4. 636. Rheed. mal. 3. 15. t. 22-25. Burm. ind. 241. Kämpf. amœn. 667.

Palma dactylifera minor humilis sylvestris, fructu minore. Herm. prodr. 361. Lin. zeyl. n. 397. Burm. zeyl. 183.

P. sylvestris malabarica, fol. acuto. fr. pruni facie. Raii hist. 1364.

Fronde pinnate, leaflets opposite.

DESCRIPTION, &c.

This Palm grows to the height of about fourteen feet, the trunk being covered with an ash-coloured crust, closely united with a very hard whitish wood. Pinnate leaves break out from the top of the trunk only, in a decussated order, the old ones dropping off as the young ones break forth. The midribs are green, smooth and shining, flat within, convex without, with long stiff spinæ at bottom. Leaflets opposite, on short petioles, numerous, oblong-rounded, acuminate, close, smooth, of a shining green, closed at the base towards the inside, finely streaked longitudinally. The flowers are concealed in stiff, green, coriaceous spathes, they are small, several on the same peduncle; petals whitish green; stamens whitish, lanuginose.

They have no smell, but a rough taste. Fruits oblong-round, small, like a wild Plum, with a hard woody point at top, covered with the calyx at bottom, first green, then red, but when ripe of a reddish brown, or blackish and shining, covered with a thin rind that is easily broken, and having a whitish, sweet, farinaceous pulp within; the nut or stone is oblong, rufous, marked longitudinally with a deep furrow, and containing a whitish bitter kernel. The fruits grow on green, smooth, shining branches, near a yard long, and two fingers broad, flat, stiff and woody; whence a clear austere liquor flows when they are cut or wounded.

The poorer sort of people chew the nut in the same manner with the Areca nut, with the leaf of the Betel and quick-lime. The elephants are very fond of the fruit branches, which are very sweet. The leaves, fruit, &c. are very astringent, and are looked upon as powerful in stopping fluxes.

Native of the East Indies. Introduced about 1763, by John Blackburne, Esq.

PROPAGATION AND CULTURE.

See PALMS.

ELATERIUM. (*Ελατηριον*, from *ελαυνω*; whatever purges the belly; troches made of the juice of the wild Cucumber; and a name for that Cucumber itself.)

Lin. gen. n. 1036. Reich. 1128. Schreb. 1398. Jacqu. amer. 241. t. 154. Juss. 294.

* Hort. malab. and Ray hist.

* Hort. kew.

Class. 21. 2. Monoecia Monandria.

Nat. order of Cucurbitaceæ.

GENERIC CHARACTER.

* Male flowers.

CAL. none.

COR. one-petalled, salver-shaped. Tube cylindric. Border five-cleft: divisions lanceolate, channelled on the back, the incisures furnished with a toothlet.

STAM. Filament single, columnar. Anther linear.

* Female flowers.

CAL. as in male.

COR. as in male.

PIST. Germ inferior, echinate. Style columnar, thickening. Stigma capitate.

PER. Capsule inferior, echinate, leathery, filled with pulp, uniform, one-celled, two-valved, elastic.

SEEDS several.

ESSENTIAL CHARACTER.

MALE. Cal. none. Cor. salver-shaped.

FEM. Cal. none. Cor. salver-shaped. Caps. inferior, one-celled, two-valved.

SPECIES.

1. *Elaterium carthagenense*.

Lin. spec. 1375. Reich. 4. 91. Jacqu. amer. 241. t. 154. pist. 118. t. 232.

Leaves cordate, angular.

2. *Elaterium trifoliatum*.

Lin. syst. 839. Reich. 91. mant. 123.

Sicyos fol. ternatis. Gron. virg. 2. 191.

Leaves ternate, gashed.

DESCRIPTIONS, &c.

1. This is probably an annual plant. Stems round, smooth, herbaceous, diffused, scandent, with tendrils bifid and lateral. Leaves very finely serrate, smooth underneath, somewhat rugged above, petioled, alternate, numerous. Peduncles of the male flowers axillary, solitary, many-flowered, spreading, almost the length of the leaves, racemed or subumbelled. Female peduncle from the same axil, solitary, one-flowered, short. Corolla white, without scent in the day, but smelling sweet at night. Fruit green, an inch and half long, having but little watery pulp, smelling like cucumber; when ripe it opens elastically with a very gentle touch, and disperses its seeds; or when approaching to maturity, if it be held some time in the hand closed, it will do the same. One valve is composed of the whole sides and the anterior part of the fruit, and is roundish two-lobed on one side, or like the figure 8: the back of the capsule forms the other, which is therefore oblong: this on the inside at the tip is furnished with a lanceolate appendix, highly elastic, furnished with about eighteen toothlets, to which as many brownish seeds adhere.

Native of Carthagen in New Spain, covering entire shrubs with its stalks, and flowering in october and november.

2. Capsule kidney-shaped, rough with hairs, two-valved, opening with a spring; and therefore of this genus.

Native of Virginia.

ELATERIUM. See *Momordica*.

ELATINE. (Of Pliny, *Ελατινη* of Dioscorides. *Ελατινος* or *ελατινος*, *abiagnus*. *Ελατινον μύρον*, oil or ointment of *Elate*.)

Lin. gen. n. 502. Reich. 544. Schreb. 685.

Gærtn. t. 112. Juss. 300. *Potamopithys* Buxb.

act. Petrop. *Alsinastrium*. Vaill. bot. par. 1. f. 6.

Class. 8. 4. Octandria Tetragynia.

Nat. order of *Inundatæ*.—*Caryophyllæ*. Juss.

GENERIC CHARACTER.

CAL. Perianth four-leaved; leaflets roundish, flat, size of the corolla, permanent.

COR. Petals four, ovate, obtuse, sessile, spreading.

STAM. Filaments eight, length of the corolla. Anthers simple.

PIST. Germ orbicular, globose-depressed, large. Styles four, upright, parallel, length of the stamens. Stigmas simple.

* Jasquin.

* Linn. mant.

PER.

PER. Capsule orbicular, globose-depressed, large, four-celled, four-valved.
SEEDS several, mooned, upright, surrounding the receptacle in the manner of a wheel.

ESSENTIAL CHARACTER.

Cal. four-leaved. Pet. four. Caps. four-celled, four-valved; flattened.

SPECIES.

1. *Elatine Hydropiper*. Opposite-leaved Water-wort.
Lin. spec. 527. *Reich.* 1. 223. *fl. lapp.* 156.
Succ. n. 348. *Hall. herb. n.* 858. *Gron. virg.* 158. *Fl. dan. t.* 156. *Krock. filif. n.* 618.
Alfinastrum serpillifolium, fl. albo tetrapetalo, & roseo tripetalo: *Vaill. par.* 5. t. 2. f. 1, 2.
Leaves opposite.
2. *Elatine Alfinastrum*. Whorl-leaved Water-wort.
Lin. spec. 527. *Reich.* 223. *fl. succ. n.* 349.
Huds. angl. 173. *With.* 418. *Hall. herb. n.* 857. *Sauv. monsp.* 164. *alt.* 1743. p. 50.
Gertn. fruct. 142.
Alfinastrum gallii folio. *Vaill. par.* 6. t. 1. f. 6.—
gratiolæ fol. *Tournef. inst.* 244. *Raii suppl.* 502. *syn.* 346.
Equisetum palustre, linariæ scopariæ folio. *Baub. pin.* 15.
Leaves in whorls.

DESCRIPTIONS, &c.

These are annual aquatic herbs, very low, and spreading; the flowers axillary and very small. In the first species they have sometimes only three petals, and six stamens; in the second, there are sometimes no more than four stamens^a.

1. A very small plant, hardly a span in length. Stems very tender, creeping; the shoots erect, and leafy. Leaves ovate-lanceolate, quite entire, sessile at the joints. Flowers solitary, much smaller than in the second species, alternate, on very short peduncles at the axils of the leaves on the branches, and close to them on the stem. Petals white, purplish or rose-coloured: styles none, stigmas very small: anthers globular. Capsules smaller than in the second^b.

Native of Denmark, Sweden, Switzerland, Silesia, France; in ditches and wet places: flowering in summer.

2. Stem decumbent, creeping at bottom, then erect, pellucid, brittle, six or seven inches in length, branched, round, the thickness of a quill, at the lower joints thick set with roots hanging in the water, having at the rest whorled, sessile, entire leaves, four to six in a whorl, (eight to twelve, *Haller*) at top only three: the emerged leaves ovate-lanceolate, the immersed ones linear, or even (according to some) capillaceous, bright green, reflex. Flowers axillary, two or three sessile: calyx very small, greenish; petals three or four, white, a little larger than the calyx: stamens seven or eight, very short^c. Capsule a little flattened; the partitions growing to the axis and opposite to the sutures of the valves. Seeds numerous, very small, somewhat cylindrical; marked with longitudinal streaks, and transverse ones much finer, in a beautiful kind of net-work, bent a little and ash-coloured^d.

Native of Aboa, Leipzig, Silesia, Switzerland, near Paris and Montpellier, England; in ditches.—Found by Mr. James Sherard on the bogs upon the common, by the road from Eltham to Chiffelhurst. It flowers in June and July.]

ELATINE. See *Antirrhinum*, [*Lathyrus Aphaca*, and *Veronica*.]

ELATOSTEMA. See *Dorstenia*.]

ELDER. See *Sambucus*.

ELDER, MARSH. See *Viburnum*.

ELECAMPANE. See *Inula*.

[ELEGIA. *Ελεγία* are elegiac verses, from *ελεος* mourning; which is *παρα το ελεος*; or *το ελεειν*; or from *ἡ ἐλεγειν*, expressive of weeping in *Aristophanes*: but what has that to do with this plant?]

Lin. mant. 162. *gen. ed.* *Schreb. n.* 1494.

^a Jussieu.

^b Krock.

^c Ibid.

^d Gertner.

Class. 22. 3. Dioecia Triandria.

Natural order of *Calamariæ*: *Junci* Juss.

GENERIC CHARACTER.

* Male.

CAL. Spathes within spathes, remote, one-valved, coriaceous, lanceolate, deciduous.

Spadix filiform, jointed; with an ament at each joint.

Ament loose, with pedicelled florets, distinguished by a bracte.

Bracte bristle-shaped, membranaceous, flat, longer than the florets.

Perianth proper, of six, bristle-shaped, chaffy loose leaflets.

COR. none.

STAM. Filaments three, very short. Anthers incumbent, oval, larger than the perianth.

* Female, on a distinct individual.

CAL. Spathe as in the male, but shorter.

Spadix as in the male.

Ament with a compound raceme.

Perianth proper six-leaved: valves the three outer lanceolate, channelled, petaloid, equal.

COR. none.

PIST. Germ somewhat oblong. Styles three, filiform, the length of the perianth. Stigmas simple.

PER.

SEED.

OBS. *Elegia*, first distinguished by *Linneus* from the genus *Restio*, and afterwards immersed in it by him, is settled by *Thunberg* to be distinct from *Restio*, in a dissertation on that genus.

ESSENTIAL CHARACTER.

SPECIES.

1. *Elegia juncea*.

Lin. Mantiss. pl. altera. p. 297.

DESCRIPTION.

This is a native of the Cape of Good Hope, and has the habit of a Rush: the stems are several, about a foot high, round, smooth, filled as it were like those of a Rush; hard, strong, very simple, scarce so thick as a quill, with a simple joint. There are scarce any leaves, but two or three leafy sheaths towards the root, imbricated over each other, and of a brown colour; there is also a rudiment of a similar sheath towards the middle of the stem: the spathe is terminal, and divided into other interior ones, which are also compound: the parts of fructification are not very easily made out, but are most clear in the female flowers.

ELEMIFERA. See *Amyris*.

ELENGI. See *Mimusops*.

ELEOSLINUM. See *Apium*.]

ELEPHANTOPUS. (*Elephant's-foot*: so named by *Vaillant*, from the shape of the lower leaves in the first species.)

Lin. gen. n. 997. *Reich.* 1081. *Schreb.* 1347.

Vaill. alt. gall. 1729. f. 11. 41. *Dill. elib.* 104.

Juss. 178. *Gertn. t.* 165. *Swartz obs.* 315.

Class. 19. 5. Syngenesia Polygamia Segregata.

Nat. order of *Compositæ Capitatae*.—*Corymbifera*, Juss.

GENERIC CHARACTER.

CAL. involucre of three broad, sharp leaflets, many-flowered, large, permanent, without an umbel.

Perianth partial four-flowered, oblong, imbricate: scales lance-subulate, mucronate, upright, of which the four longer are equal.

COR. Compound tubular: Corollets hermaphrodite five or four, equal, disposed in a single circle.

Proper one-petalled, tubular. Border narrow, five-parted, nearly equal.

STAM. Filaments five, capillary, very short. Anther cylindrical, tubular.

PIST. Germ ovate, crowned. Style filiform, length of the stamens. Stigmas two, slender, spreading.

PER. none. Calyx unchanged.

SEEDS solitary, compressed. Down bristle-form.

REC. naked.

OBS. This genus shows that no limits intervene between the flosculous and semiflosculous flowers of *Tournefort*.

ESSENTIAL CHARACTER.

Cal. four-flowered. Cor. tubular, hermaphrodite.
Recept. naked. Down. bristle-form.

SPECIES.

1. *Elephantopus scaber*. *Rough-leaved Elephant's-foot*.
Lin. spec. 1313. Reich. 3. 943. hort. cliff. 390.
upf. 147. Gært. fruct. 2. 414. Gron. virg. 176.
Brown. jam. 312. Sloan. jam. 1. t. 156. f. 1.
(*Scabiosæ* affinis.) Dill. elth. 126. t. 106.
f. 126. Breyn. ic. 32. t. 24. (*Bidens*.) Pluk.
alm. t. 388. f. 6. (*Echinophora*.) Rheed. mal.
10. t. 7. Burm. ind. 185.
Leaves oblong, scabrous.
2. *Elephantopus tomentosus*. *Woolly-leaved Elephant's-foot*.
Lin. spec. 1314. Reich. 943. Gron. virg. 115.
Leaves ovate tomentose.
- [3. *Elephantopus spicatus*.
Swartz prodr. 115. Gært. fruct. 2. 415. Aubl.
guian. 808. Lamarck encycl. 2. 349. Brown.
jam. 311. 1.
Coryza major inodora helenii folio, &c. Sloan. jam.
1. 256. t. 150. f. 3, 4.
*Leaves ovate-lanceolate serrate scabrous, bundles of
flowers sessile lateral, stem branched.*
4. *Elephantopus angustifolius*.
Swartz prodr. 115.
C. inod. hel. fol. integro angusto, &c. Sloan. jam.
1. 256. t. 148. f. 4.
*Stem-leaves linear-lanceolate entire villose, flowers glo-
merate in sessile and peduncled bundles, stem simple.*

DESCRIPTIONS, &c.

Stem somewhat woody; involucre three-leaved containing three calyxes, sometimes large boat-shaped, in very loose corymbs, and on long pedicels; sometimes smaller in the shape of bractes and axillary, sessile and in spikes^a.]

1. This sends out from a perennial root many oblong rough leaves, which spread near the ground: between these, in the spring arises a branching stalk, little more than a foot high. The side-branches are short, and generally terminated by two heads of flowers, each on a short peduncle. The florets are of a pale purple colour.

[Dillenius describes it more particularly. Height commonly eighteen inches or two feet. Stem rigid, round and hairy, the thickness of the little finger at bottom. Leaves embracing, much wrinkled, hirsute with hairs over the whole surface, ferrate, but the ferrature frequently not very conspicuous because the leaves are so much wrinkled and bent. From the axils of these, towards the top, spring forth the flowering branches, terminated by leafy heads collected in bundles; each having two or three leaves under it, instead of a common calyx; in the bosom of these is the flower, the proper calyx of which consists of many narrow, sharp-pointed, pungent scales, and contains three, four, or five florets, very pale purple, tubular, commonly divided into five narrow segments. Seeds cylindric-compressed, crowned with dry white segments instead of a pappus.

According to Browne, it rises generally from half a foot to three or four feet in height; and is generally adorned with a great number of flowers, gathered into pretty large heads, at the extremities of the branches. The seeds are of an oblong form, each crowned with five little bristles. The common peduncles are very long, and terminate the branches; but at the separations of them there is always a smaller head growing to the stem, without any supporter. It is supposed to be a native of both Indies; Mr. Miller received it from several parts of America. Browne says, it is frequent enough in many places, on the north side of the island of Jamaica. Vaillant gave this plant the name of *Elephantopus*, because he took it to be the same with the *Ana-Schovadi* of the Hortus Malabaricus, which signifies the foot-step of an elephant. The accurate

Dillenius however is doubtful of this, and perhaps after all, the East-Indian and West-Indian plants may be different species.

This is a perennial plant, and flowers at the end of summer, and beginning of autumn,] but rarely produces seeds in England.

[It was cultivated in the botanic garden at Chelsea in 1695^b.

Browne says, that it is accounted a good vulnerary, and much used in consumptive cases in the East Indies. The leaves are frequently used, instead of *Carduus Benedictus*, among the inhabitants of the French West India islands.]

2. Root-leaves four inches long and three broad, having many transverse nerves; they spread flat on the ground, and from among them rises a stiff stalk, about a foot high, dividing into several branches, and terminated by two flowers, composed of several florets, inclosed in a four-leaved involucre, having two of the leaflets alternately larger than the two others. This involucre being longer than the florets, they do but just appear within the two larger leaves; and the flowers make little appearance. They come out in July, but the seeds never ripen in this country. It grows naturally in South Carolina; and frequently comes up as a weed in earth sent over thence with other plants. [Linneus remarks, that it is very nearly allied to the preceding.

3. This generally rises to the height of fifteen or twenty inches, sometimes more. The common receptacles of the flowers rise singly from the axils of the upper leaves, and seem disposed in the form of a spike, but there are seldom more than four florets in each. The seeds are crowned with four little bristles^c.

At first coming up it has many leaves, five inches long, and an inch and half broad where broadest; beginning very narrow, they continue so for two inches, and end in a round point; they are hard, smooth, dark green, and indented about the edges. From among these a round, strong, green stalk rises, four feet high, with an embracing leaf at each joint: it has branches towards the top, standing round at every joint, divided into others, which are beset with smaller leaves. From the axils of these come out the flowers, without any peduncle, standing in several green leaves. The corollets are white^d.

The flowers are in bundles, without any involucre, sessile in the axils of the leaves, in form of spikes on the uppermost branches. Calyxes subcylindric, four-leaved, with as many awl-shaped, imbricate scales at the base, and four-flowered. Seeds oblong, attenuated downwards, compressed, striated, having very minute, appressed fulvous bristles scattered over them, of a brown-ochrous colour. Egret bristle-awned, toothless, having five or seven rays, two of which are lateral and very long, below the tip, having a double curvature, first downwards then up again; the others are straight, shorter, sometimes very short: all are of a whitish straw-colour, slightly widening at the base, toothless and smooth.

Linneus has called the corollets *ligulate*, whereas they are plainly tubular, equally and deeply five-cleft; he was perhaps led into the mistake, from the two outmost segments being sometimes glued together^e.

Native of Jamaica, Hispaniola, and Guiana.

4. Root large, oblong, whence rises a single, round, striated, hollow stalk, about two feet high, having sessile leaves set on it alternately; their lower part whereby they are joined to the stalk having a membrane inclosing it: they are about five inches long, and half an inch broad near the top where broadest, end round, are of a pale green colour, and wrinkled. Towards the top come out the flowers in a spike, sessile, inclosed in an involucre of a few dry brown membranes: these are followed by small channelled seeds, having much pappus on them^f.

^b Hort. kew.

^c Browne.

^d Sloane.

^e Gærtner.

^f Sloane.

^a Jussieu.

Native of Jamaica: Sloane found it about mount Diablo very plentifully.]

PROPAGATION AND CULTURE.

These plants are propagated by seeds, which should be sown on a hot-bed in the spring; and when the plants are come up, they must be transplanted into pots filled with fresh light earth, and plunged into a hot-bed of tanner's bark, observing to water and shade them until they have taken root; then you should let them have a large share of fresh air in warm weather, and they will require to be frequently refreshed with water.

The first, having a perennial root, if it is planted in a pot, and sheltered in the winter from frost, may be preserved several years, and will annually flower; but the second sort seldom continues longer than two years.

[ELEPHANT'S-FOOT. See *Elephantopus*.]

ELEPHAS. See *Rhinanthus*.

[ELETARI. See *Anomum*.

ELEUSINE. See *Cynosurus*.

ELICHRYSO AFFINIS. See *Achyranthes*, *Baccharis*, *Iva*, *Tarconanthus*.

— *similis*. See *Conyza*.]

ELICHRYSUM. See [*Athanasia*, *Chrysocoma*, *Conyza*,] *Guaphalium*, [*Stoebe*, *Tanacetum*, *Tarconanthus*, *Xeranthemum*.

ELIOCARMOS. See *Ornithogalum*.

ELLEBORINE. See *Astrantia*, *Cypripedium*, *Serapias*.

ELLEBORUM and ELLEBORUS. See *Helleborus*.]

ELLISIA. (So named in memory of John Ellis, F. R. S. author of a treatise on Corallines, &c.)

Lin. gen. n. 244. Reich. 218. Schreb. n. 268. Juss. 129.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Lurideæ*.—*Borragineæ*. Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-parted: divisions sharp, gaping.

COR. one-petalled, funnel-form, smaller than the calyx: border five-cleft.

STAM. Filaments five, shorter than the tube. Anthers roundish.

PIST. Germ roundish. Style filiform, short: Stigma two-cleft, oblong.

PER. Capsule bag-form, leathery, two-valved; two-celled, the calyx then very large, flat, star-form.

SEEDS in each cell two, globose, black, hollow-dotted: but one seed over the other, scarcely separated by a transverse partition.

ESSENTIAL CHARACTER.

Cor. funnel-form, narrow. Berry dry, two-celled, two-valved. Seeds two, dotted, one placed over the other.

SPECIES.

1. *Ellisia Nyctelea*. Cut-leaved *Ellisia*.

Lin. syst. 195. Reich. 1. 418. mant. 336.

Polemonium Nyctelea. Lin. spec. 231. Nov. æt. ups. 1. 97. t. 5. f. 5.

Planta lithospermo affinis. Aët. eph. nat. cur. 1761. p. 330. t. 7. f. 1.

Scorpiurus humilis virginianus, fol. rutaceis. Mor. hist. 3. 451. f. 11. t. 28. f. 3.

DESCRIPTION, &c.

[Allied to *Hydrophyllum*. Root annual. Stem herbaceous, brittle, dichotomous, very much branched, diffused, prostrate, round. Leaves resembling those of *Hydrophyllum*, alternate, petioled, pinnatifid, during foliation imbricate backward, the divisions sharp, with a tooth on each side. Peduncles opposite to the leaves, one-flowered, spreading, elongated, pubescent. Flowers drooping: corolla white, with minute purple dots on the inside of the divisions. The position of the seeds is singular^a.

Native of Virginia. Cultivated in 1755, by Mr. Peter Collinson. It flowers in July and August^b.

ELLISIA. See *Duranta*.]

ELM. See *Ulmus*.

[ELVELA. See *Agaricus*, *Helvella*, *Tremella*.

^a Linn. mant.

^b Hort. kew.

ELUTERIA. See *Cluytia*.

ELYCHRYSUM. See *Stæbelina*.

ELYMUS. (*Ελυμος* of Dioscorides, from *ελωω*, involve; the spike in some species being involved in the involucre.)

Lin. gen. n. 96. Reich. 102. Schreb. n. 123.

Juss. 31.

Class. 3. 2. Triandria Digynia.

Nat. order of *Gramina*, *Gramineæ*, or *Grasses*.

GENERIC CHARACTER.

CAL. Receptacle common lengthened into a spike. Glume four-leaved, two-ranked; two subulate leaflets being placed under each spikelet.

COR. two-valved: Valve exterior larger, acuminate, awned; interior flat.

Neet. two-leaved: leaflets oblong, sharp, ciliate.

STAM. Filaments three, hair-form, very short. Anthers oblong, two-cleft at the base.

PIST. Germ top-shaped. Styles two, divaricated, hairy, inflected. Stigmas simple.

PER. none. Corolla involving the seed.

SEED single, linear, convex on one side, covered.

ESSENTIAL CHARACTER.

Cal. lateral, two-valved, aggregate, many-flowered.

SPECIES.

1. *Elymus arenarius*. Sea Lyme-grass.

Lin. spec. 122. Reich. 1. 231. it. scan. 336.

fl. suec. n. 111. Hudf. angl. 56. With. 124.

Lightf. scot. 108. Fl. rust. t. 31. Schreb.

2. 85. t. 40. Gmel. sib. 1. 119. t. 25. (Triticum.)

Gramen caninum maritimum spica triticea. Raii hist. 1256. n. 5. syn. 390. 3.

Spike upright, close, calyxes tomentose, longer than the floret.

2. *Elymus fibiricus*. Siberian Lyme-grass.

Lin. spec. 123. Reich. 1. 232. hort. ups. 22.

amæn. 3. 20. Schreb. gram. 2. 1. t. 21. f. 1.

Gmel. sib. 1. 123. t. 28.

Spike pendulous, close; spikelets in pairs, longer than the calyx.

3. *Elymus philadelphicus*. Philadelphia Lyme-grass.

Lin. spec. 122. Reich. 232. amæn. 4. 266.

Spike pendulous, patulous, spikelets six-flowered, the lower ones ternate.

4. *Elymus canadensis*. Canadian Lyme-grass.

Lin. spec. 123. Reich. 232. amæn. 3. p. 20.

Gramen fecalinum majus altissimum virginianum. Mor. hist. 3. 180. f. 8. t. 2. f. 10. Raii suppl. 599.

Spike nodding, patulous, lower spikelets ternate, upper binate.

5. *Elymus caninus*. Bearded or dog's Lyme-grass, or Wheat-grass.

Lin. spec. 124. Reich. 233. fl. suec. n. 112.

Lightf. scot. 108. Pollich. pal. n. 131. Leers

herborn. n. 96. t. 12. f. 4. Krock. siles. n. 191.

Triticum caninum. Lin. spec. ed. 1. 86. Hudf. angl. 58. With. 129. Relb. cant. n. 108. Hall.

helv. n. 1426. β. Schreb. spicil. 51.

Gramen caninum non repens elatius, spica aristata. Mor. hist. 177. t. 1. f. 2. Buxb. cent. 4. t. 50. —aristatum, rad. non repente, sylvaticum. Raii syn. 390.

Spike nodding close, spikelets straight, without any involucre, the lowest double.

6. *Elymus tener*.

Lin. syst. 125. suppl. 114.

Spike pendulous, florets double.

7. *Elymus virginicus*. Virginian Lyme-grass.

Lin. spec. 123. Reich. 233. hort. ups. 22. Gron.

virg. 13. (Hordeum).

Spike erect, spikelets three-flowered, involucre streaked.

8. *Elymus europæus*. Wood Lyme-grass or Barley-grass.

Lin. syst. 125. Reich. 233. mant. 35. With.

124. Krock. siles. n. 192.

Hordeum sylvaticum. Hudf. angl. 57. Fl. rust. t. 45. Hall. helv. n. 1537.

H. cylindricum. Murr. prodr. 43.

Gramen

Gramen secalinum majus sylvaticum: *Raii syn.* 392. *Mor. hist.* 3. 180.—maximum. *Park. theat.* 1144.

G. hordeaceum montanum f. majus. *Baub. pin.* 9. *spica strigosa, brevius aristata*. *Scheuch. agr.* 16. *prodr. t. 1. f. 1.*

Spike upright, spikelets two-flowered, equal to the involucre.

9. *Elymus Caput medusæ*. *Portugal Lyme-grass*. *Lin. spec.* 123. *Reich.* 234. *Forfk. ægypt.* 25. *Schreb. grain.* 2. 17. *t. 24. f. 2. amæn.* 3. 21.

Avena lusitanica spicata, caput medusæ referens. *Mor. hist.* 3. 210. *Raii suppl.* 611.

Spikelets two-flowered, involucre bristle-form, spreading very much.

10. *Elymus Hystrix*. *Rough Lyme-grass*.

Lin. spec. 124. *Reich.* 234.

Spike upright, spikelets without involucre, spreading.

11. *Elymus giganteus*.

Vahl symb. 3. 10.

Spike erect, close, spikelets in sixes, six-flowered, villose, calyxes awl-shaped, smooth, longer than the spikelets.

DESCRIPTIONS, &c.

Glumes two or three in each tooth of the axis, two-valved (in *E. Hystrix* none), one or two-flowered, or more, often many-flowered, with two-valved calyxes. The glumes connected have the appearance of an involucre, or of a four or six-leaved glume, in two or three rows, with the calyxes disposed in distinct spikelets^a.

1. *Leaves* reedy, glaucous or whitish, involute and mucronate, channelled and rigid. Stems two or three feet high and more, strengthened by three or four joints. *Spike* tomentose, linear, eight or nine inches long, as large as a full-sized ear of wheat, but less compact. *Spikelets* two, straight, two-flowered, awnless. Like *Arundo arenaria*, it prevents the sea sand from blowing about by means of its matted roots^b. Dr. Withering conjectures that it may possibly admit of being made into ropes, as *Stipa tenacissima* is in Spain. It is perennial, frequent on the sea-coast in many parts of Europe, and flowers from June to August.

2. Stems tall, round and smooth: leaves moderately broad, and commonly distinguished by a kind of glaucous powdery complexion on the under sides. *Spike* pendulous, close or contracted, with the spikelets by twos, and longer than the calyx: the awns are moderately long, and slightly flexuose^c.

Perennial. Native of Siberia. Flowering in June and July. Cultivated in 1758, by Mr. Miller^d.

3. This in its habit and whole structure is extremely similar to the *E. canadensis*, but the spikes in this are nodding or descending: the spikelets in this are also six-flowered; in the other four-flowered: in this also the awns are less straight, and a little flexuose, even while flowering; whereas in the other they are straight: the calyx is as short again as the spikelet^e.

Native of Philadelphia. Perennial.

4. This agrees in most circumstances with the second species, it differs however in these. 1. The spikelets are villose, not naked. 2. The involucre end in an awn longer than the spikelet itself, whereas in the other the awn is much shorter than the spikelet. 3. The lower spikelets are three together, but in *E. sibiricus* they are no more than two. 4. The spikelets, when in flower, stand wide from the scape, whereas in the other they approximate to it. At the base of each floret, on the inside of the spikelets, is a dot or spot of a rufous-brown colour. The leaves of this are blueish, especially underneath, which is not the case in *E. sibiricus*. The awns also of the corolla, when the seed is ripening, from spreading become reflex, which in the other species they do not. Native of Canada^f, and Virginia.

^a Jussieu.

^c Gmelin.

^b Linn. spec. & succ. Lightf. Ray.

^d Hort. kew.

^e Linn. amœn.

^f Linn. spec.

Introduced before 1699, by the Rev. John Banister. It flowers in July and August, and is perennial^g.

5. Leaves bare of hairs underneath. Sheaths smooth. Spikelets five or six lines long: calyx three lines long: lowermost corolla four or five lines long; the outer valve sending out from a bluntish point, an awn, from seven to nine lines long; inner valve lanceolate, just sensibly longer than the outer, which is bare of hairs, with the edges at the point membranaceous. These latter circumstances distinguish this grass from *Festuca sylvatica*, which it very much resembles in its general appearance^h.

It differs from *Triticum repens*, in the root not being creeping; the spikelets longer, narrower and rounder, furnished with long awns; whereas in *Tr. repens* they are very short, if anyⁱ.

Linneus removed this from the genus *Triticum*, wherein he had first placed it, on account of the lower spikelets being in pairs. Schreber never could discern this. Krockner however affirms that it really is so in the Silesian plants.

Perennial; growing in woods and hedges; as between Greenwich and Woolwich; about Croydon; Ripton wood, Huntingdonshire, Stokenchurch woods, Oxfordshire, &c. in the north frequent. It flowers in June and July.

6. *Culm* two feet high, smooth and even, with red joints. *Leaves* smoothish, or but little scabrous, with very smooth sheaths. *Spike* like *E. sibiricus*, but much more slender. *Involucre* alternate, four-leaved, shorter than the floscules, subulate, three-flowered. *Floscules* sessile, in pairs, with a pedicelled one between them. *Awns* terminating, as long as the floscules or longer, often flexuose. Native of Siberia^k.

7. In this species the spike exceeds that of an ear of common barley, and there are two sessile involucre affixed to each denticulated axis or base: each of these involucre consists of two rays, which are longer than the flowers, and thicker, and are terminated by a long awn^l.

Perennial. Native of Virginia. Introduced in 1781, by Mr. William Curtis^m.

8. *Culm* upright, stout, two feet high and more, having four or five joints. The leaf at each of these is about a span in length, and a quarter of an inch or more in breadth; smooth to appearance, but roughish to the touch, especially round the edges. Sheaths hairy. *Spike* narrow, two inches or more, and sometimes near three inches in length, much narrower, more naked, less rough, and harder than in Wall Barley-grass (*Hordeum murinum*); the spikelets are stiffer and longer, the pedicels thicker, and the awns shorter, except that of the inner valve of the corolla, which is longer: the middle floret is rather larger than the two others, with an awn somewhat shorter. They are all smooth to the naked eye, but appear hairy with a magnifierⁿ.

It very much resembles *E. virginicus*, but the leaves of the involucre are not scored, as they are in that. The florets, together with their awns, are longer than the involucre; they are two in number, whereas in that they are three^o. The two leaves of the involucre proceed from an exceedingly short pedicel, distinct from that of the floret; they are equal, and somewhat scored towards the end. Florets generally single, but often two, and both fertile; the lower on an exceedingly short pedicel; the upper on a pedicel nearly half its length, with the rudiment of a third pedicel at the base of the inner valve.—In structure it is an *Elymus*, in habit it approaches rather more to the *Hordeum*: in truth it seems the connecting link between both^p.

Native of Germany, Switzerland, England, in woods, with us in a calcareous soil, as near Berkhamstead in Herts; Marlow and Hambleton, in Bucks; Henley and Stokenchurch in Oxfordshire;

^g Hort. kew.

^h Linn. suppl.

ⁱ Haller & Fl. rust.

^j Stokes in Withering.

^k Gron. virg.

^l Stokes in Withering.

^m Pollich.

ⁿ Hort. kew.

^o Linn. mant.

Ripton woods, Huntingdonshire; rocks opposite Matlock baths; in the North frequent.—Perennial; flowering in June. It is a coarse grass, like most of those which grow in woods; and like them is sometimes drawn up to a great height.

9. Culm narrow, a foot high. Spike oblong. Partial involucre four-leaved, spreading very much, or reflex, the length of the florets with their awns. Spikelets in pairs, two-flowered; both florets awned, but the inner one smaller in all its parts. Native of Spain and Portugal, on the coasts.—Annual. Flowering in July. Introduced in 1784, by M. Thouin.

10. Spike compounded of two spikelets at each tooth of the rachis. Spikelets four-flowered, with long awns. Two calluses instead of an involucre.—Annual. Native of the Levant. It flowers here in July and August. Introduced in 1770, by M. Richard.

11. Culm the thickness of the middle finger. Leaves involute, strict. Spike a foot and half long, almost two inches thick at bottom, attenuated at top, imbricate, with numerous spikelets, an inch long. Valves of the calyx keeled, hollow, a little longer than the spikelets. Florets distich, seven, the end one barren: outer valve lanceolate, striated at top, villose to the middle; inner linear, blunt, flattish within, hollow without. Rachis villose. Its country is unknown.

PROPAGATION AND CULTURE.

See GRASS.

ELYMUS. See *Hordeum* and *Zizania*.

EMBLICA. See *Phyllanthus*.

EMBOTHRIUM. (So named by Forster, from *ev* and *bothrion* a little pit or hollow; the anthers being placed in a hollow of the petal.)

Lin. gen. Schreb. n. 145. suppl. 16. Forst. gen. 8. Juss. 79.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Protea*. Juss.

GENERIC CHARACTER.

CAL. none.

COR. Petals four, linear, oblique; with the tip broader, roundish, concave, stamiferous; after fecundation revolute.

STAM. Filaments four, very short, on each petal one or none. Anthers oblong, within the cavity of the petal, largish.

PIST. Germ linear, ascending, inflex. Style none. Stigma roundish, plane in front, behind concave, large.

PER. Follicle round, one-celled.

SEEDS four or five ovate, compressed, with a winged membrane on one edge.

ESSENTIAL CHARACTER.

Cor. four-petalled. Anthers sessile, sitting on the tips of the petals. Follicle round.

SPECIES.

1. *Embothrium umbellatum*.

Lin. syst. 166. suppl. 128. Forst. gen. n. 8. Fl. austr. n. 60.

Umbels axillary, very simple, peduncled, leaves oblong, veinless, anthers sessile.

2. *Embothrium coccineum*.

Lin. syst. 166. suppl. 128. Forst. gen. n. 8. Cavan. hisp. t. 65. Lamarck encycl. 2. 355.

Thyrse terminating, sessile, anthers pedicelled, leaves obovate, veined, (oblong-ovate, ending in a cusp.)

3. *Embothrium speciosissimum*.

Smith New Holl. 19. t. 7.

4. *Embothrium filifolium*.

Smith New Holl. 23. t. 8.

DESCRIPTIONS, &c.

1. A handsome shrub. The flowers small and red, in solitary umbels.—Native of New Caledonia.

2. The whole plant is smooth. Stem shrubby. Leaves scattered, having one nerve branching on both sides, on short petioles, dilated at the base, and

^a Linn. spec.

^b Hort. kew.

^c Hort. kew.

^d Vahl.

^e Linn. spec.

^f Linn. suppl.

reddish. Buds red, with lanceolate, reflex scales. Flowers in spikes, terminating. Corolla scarlet, tubular-incurved, with an anther lying in the broad end of each of the four petals. Germ superior, oblong, terminated by a long linear style: stigma flat. Seeds in the follicle imbricate, with a sharp wing. Found in Terra del Fuego by Forster, and in the straits of Magellan by Commerfon, who named it *Ixora*. Its common name is *Catas*. Several other species have been observed in Peru and Chili.

3. This is a magnificent shrub; a native of New Holland: it grows to the height of eight or ten feet, with several simple, wand-like, round branches, clothed with numerous large, alternate, bright-green leaves, from four to six inches long; obovate and blunt, but tipped with a small point: they are more or less serrated on the sides. The flowers grow in a very dense simple head on the top of each branch, and the head is surrounded at the base with numerous lanceolate leaves, or rather bractes, constituting the involucre: these as well as the flowers themselves are of a rich sanguine red.

4. Native of New Holland. The stems, which are several, grow three or four feet high or more, and are upright, and alternately branched, and have alternate leaves, which in shape much resemble those of the *Peucedanum Silaus*; the upper and lower leaves are, however, more simple: the flowers stand in a long loose terminal spike, and are white, with the tips of the petals revolute.

EMERUS. See *Æschynomene*, & *Coronilla*.]

EMPETRUM. (Of Pliny, *Εμπέτρον* of Dioscorides. From *ev* and *πετρος*, a rock; so named from the place of its growth.)

Lin. gen. n. 1100. Reich. 1202. Schreb. 1496.

Tourn. 421. Gertn. t. 106. Juss. 162.

Class. 22. 2. Dioecia Triandria.

Nat. order of *Ericæ*. Jussieu.

GENERIC CHARACTER.

* Male.

CAL. Perianth three-parted: divisions ovate, permanent.

COR. Petals three, ovate-oblong, narrower at the base, larger than the calyx, withering.

STAM. Filaments three, capillary, very long, hanging forwards. Anthers upright, short, two-parted.

* Female.

CAL. Perianth as in the male.

PIST. Germ superior, depressed. Style scarce any. Stigmas nine, reflex-expanding. (Styles three to nine. G.)

PER. Berry orbiculate, depressed, one-celled, larger than the calyx.

SEEDS nine, jointedly placed in a circle, on one side bulging, on the other cornered. (Seeds three to nine. G.)

ESSENTIAL CHARACTER.

MALE. Cal. three-parted. Cor. three-petalled. Stam. long.

FEM. Cal. three-parted. Cor. three-petalled. Styles nine. (three to nine.) Berry nine-seeded. (three to nine.)

SPECIES.

[1. *Empetrum album*. White-berried Heath.

Lin. spec. 1450. syst. 880. Reich. 4. 235. hort. cliff. 470. Gertn. fruct. 2. 107.

E. lusitanicum fructu albo. Tourn. inst. 579.

Erica erecta, baccis candidis. Bauh. pin. 486. Raii hist. 1630.

E. coris folio, decima. Clus. hist. 1. 45.—*baccifera lusitanica*. Bauh. hist. 1. 528. 1.—fr. albo. Park. theat. 1485. 1.—*tenuifolia*. Ger. emac. 1383. 10. Erect.]

2. *Empetrum nigrum*. Black-berried Heath, Crow or Crane-berry.

Lin. spec. 1450. Reich. 4. 235. hort. cliff. 470.

fl. lapp. n. 379. suec. n. 904. Hudf. angl. 431.

With. 1110. Lightf. scot. 612. Hall. herb.

n. 1605. Jacqu. vind. 298. Gmel. sib. 3. 16.

^g Cavanilles.

n. 7. *Gunn. norv. n. 12. Mill. illustr. ic. Gartn. fruct. 2. 108. Dubam. arb. 1. 217. t. 91. Pallas rofs. 1. 2. p. 49.*
E. montanum, fructu nigro. *Tournef. inst. 579. Raii syn. 444.*
Erica baccifera. Clus. pann. 29. Camer. epit. 77. —procumbens. Ger. emac. 1383. 9.—nigra. Baub. pin. 486. Park. theat. 1485. 2. Raii hist. 1631.
Procumbent.

DESCRIPTIONS, &c.

[1. This differs from the following species in having the smaller branches pubescent; the leaves longer, somewhat scabrous on their upper surface, and channelled underneath. Berry guarded at the base by the calyx, fleshy, white, shining. Seeds two or three, seldom more, bony, on one side convex and obscurely furrowed, on the other angular or flattish. —Native of Portugal.

2. A small decumbent shrub. The outer bark deciduous, and of a brown colour, the inner yellow. Branches rough with the remains of the petioles. The terminating bud consists of five membranaceous leaflets, hairy at the edge; this puts forth five little branches, of which four are in a whorl. The leaves are in fours; they are somewhat three-cornered, with a white linear keel, and petioled. Flowers axillary, sessile, solitary, surrounded by a bracte resembling an outer three-parted calyx. Calyx whitish. Petals purple. Filaments very long, and purple, with brownish black anthers. The female is like the male, but the stem is redder; the leaves deep green, in fives; pistil black. Berries brownish black, when ripe. —The colour and size of Juniper berries, marked at top with a small round hole, protected at bottom with a whitish three-leaved calyx, and a red corolla of three petals: the flesh is rather firm, and pale green, except that towards the circumference it is purplish: receptacle central, columnar, slender. From six to nine bony, pale-coloured seeds are placed round this in a ring, and fixed to it a little above the base.

Linneus informs us that he once, and once only, met with a plant which had hermaphrodite flowers. Professor Jacquin has observed several with three, two, and even one stamen only; a few females, but no males; the stamens are very upright, stiff and straight.

Native of the northern parts of Europe, generally in elevated situations, both on dry, barren, and moorish or boggy soils. In moors from the Baltic to the Eastern ocean, in Kamtschatka, and the isles towards America. In the mountains of Lapland, and at the mines of Fahlun it abides, when other plants have perished with the cold. In Warwickshire, Staffordshire, Derbyshire, and the northern counties of England, it is frequent; also in Scotland.

The Highlanders and children in Scotland eat the berries, but they are no very desirable fruit; and taken in large quantities are said to bring on a slight head-ache. The Russian peasants, however, eat them, and the Kamtschadales gather great quantities of them to boil with their fish, or to make a sort of pudding with the bulbs of their lilies. They are esteemed antiscorbutic and diuretic. Grouse and heath-cocks feed upon them, and they give the excrement a tinge of purple. Boiled in alum-water they afford a dark purple dye: and boiled with fat they are said to be used in dyeing otter and sable skins black. Cattle do not seem to browse on this shrub. —Linneus says that it flowers in april with the Elm; with us it flowers in april and may.

PROPAGATION AND CULTURE.

These little shrubs are seldom propagated in gardens unless for variety sake; but they may be cultivated in shady places, and will thrive very well in gardens, where the soil is stiff. The plants should be pro-

cured from the places where they grow naturally, for the seeds remain a year in the ground before they vegetate, and afterwards are very slow in their growth. If they are planted on a moist boggy soil in autumn, they will get roots in the winter, and will require no farther care than to clear them from weeds; for these low shrubs commonly grow upon the tops of wild mountains, where the soil is peaty, and full of bogs.

[EMPETRUM. See *Begonia*.

EMPLEURUM. (*Εμπλευρος, latera plena habens.*)

Lin. gen. Schreb. n. 1765. Hort. kew. 3. 513. Juss. 298.

Class. 21. 4. Monoecia Tetrandria.

Nat. order of *Aggregatæ. Rutaceæ. Juss.*

GENERIC CHARACTER.

* Male flowers.

CAL. *Perianth* one-leaved, bell-shaped, four-toothed, permanent.

COR. none.

STAM. *Filaments* four, awl-shaped, longer than the calyx, patulous. *Anthers* oblong, subquadrangular, retuse.

* Female flowers, on the same plant.

CAL. as in the male.

COR. none.

PIST. *Germ* superior, oblong, compressed, terminated by a leafy, erect process. *Style* none. *Stigma* placed on the lateral toothlet of the germ, cylindric, deciduous.

PER. *Capsule* oblong, compressed, crowned by a leafy process, one-celled, opening along the straighter margin.

SEED solitary, oblong, covered with a subcoriaceous bivalve aril.

OBS. *It very seldom happens that there are two capsules from one calyx.*

ESSENTIAL CHARACTER.

MALE. Cal. four-cleft. Cor. none.

FEM. Cal. four-cleft, inferior. Cor. none. *Stigma* cylindric, placed on the lateral toothlet of the germ. *Caps.* opening on the side. *Seed* one, arilled.

SPECIES.

1. *Empleurum ferrulatum. Cape Empleurum.*

Ait. hort. kew. 3. 340.

Diosma unicapsularis. Lin. suppl. 155.

DESCRIPTION, &c.

This is a shrub, with wand-like, even branches. Leaves like those of a Willow, alternate, subpetioled, linear-lanceolate, even above, beneath longitudinally wrinkled, smooth, quite entire on the edge, but appearing to be serrate by pellucid dots. Peduncles few-flowered, lateral, much shorter than the leaves. Flowers small, most of them male. Capsules usually solitary, incurved, with a beak of the same length. In the habit and aril of the seed it resembles *Diosma*, but it has no corolla, and only a single capsule. First observed by Sparrmann, at the Cape of Good Hope. Introduced here by Mr. Francis Masson in 1774.

ENARGEÆ. (*Ενργεια, evidentia, illustratio.*)

Banks. Lin. gen. Schreb. n. 598. Gartn. t. 59.

Class. 6. 1. Hexandria Monogynia.

GENERIC CHARACTER.

CAL. none.

COR. *Petals* six, oblong-ovate, concave, acute; three outer, and three inner; all marked below the middle with two green spots.

STAM. *Filaments* six, half the length of the corolla.

PIST. *Germ* roundish. *Style* three-cornered, thick.

PER. *Berry* subglobular, three-celled.

SEEDS four or five, globular.

ESSENTIAL CHARACTER.

Cal. none. *Pet.* six, oblong-ovate, concave, acute, three outer, three inner, green-spotted. *Berry* three-celled, with four or five globular seeds.

SPECIES.

1. *Enargea marginata.*

Gartn. fruct. 1. 283.

^m *Lin. suppl. & Jussieu.*

ⁿ *Hort. kew.*

^c *Linn. syst.*

^d *Gartner.*

^e *Linn. succ.*

^f *Gartner.*

^g *Vind.*

^h *Linn. lapp.*

ⁱ *Pallas rofs.*

^k *Ibid.*

^l *With. & Lightf.*

DESCRIPTION, &c.

The fruit is an elliptic-spheroidal Berry, fleshy, the same consistence with those of *Vitis idæa*, red purple on one side, whitish on the other: in each of the three cells there are four or five globular, rufescent seeds.

Native of Terra del Fuego^o.

ENCALYPTA. A species of *Leersia*, in *Hedw. fund.* 2. p. 88. A species of *Bryum* in Linneus. *Schreb. gen. n.* 1643.

ENCHANTER'S NIGHTSHADE. See *Circæa*.

ENDIVE. See *Cichorium*.

ENGLISH MERCURY. See *Chenopodium*.

ENTADA. See *Mimosa*.

ENTOGANUM. See *Melicope*.]

ENULA. See *Inula*.

[EPACRIS. (From *ἐπί* and *ἀκρίς*, the summit of a mountain; these plants growing in that situation. *Forster*.)

Lin. gen. Schreb. n. 279. *suppl.* 19. *Forst. gen.* 10. *Juss.* 161. *Gærtn. t.* 94.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Ericæ*. *Juss.*

GENERIC CHARACTER.

CAL. Perianth five-parted, equal, permanent: divisions lanceolate.

COR. one-petalled, funnel-form: tube gradually widening into a five-cleft border; divisions ovate, acute, villose above.

Nectary five obovate, emarginate scales, fastened to the germ, and pressed close.

STAM. Filaments five, very short, in the throat of the corolla. Anthers incumbent.

PIST. Germ roundish, five-streaked. Style cylindric, short. Stigma capitate.

PER. Capsule globular-flattened, five-celled, five-valved, gaping.

SEEDS numerous, very small.

ESSENTIAL CHARACTER.

Cor. funnel-form, villose. Nect. scales fastened to the germ. Caps. five-celled, five-valved.

SPECIES.

1. *Epacris longifolia*.

Lin. syst. 198. *suppl.* 138. *Forst. gen.* 10. n. 1. *fl. austr.* n. 68.

E. frondosa. *Gærtn. fruct.* 2. 77.

Ardisia frondosa. *Soland. Mss.*

Arboreous; leaves subulate, sheathing, racemes upright, flowers opposite.

2. *Epacris juniperina*.

Lin. syst. 198. *suppl.* 138. *Forst. gen.* 10. n. 2. *fl. austr.* n. 71, 72.

Ardisia acerofa. *Gærtn. fruct.* 78.

Stiphelia acerofa. *Soland. Mss.*

Arboreous; leaves scattered, linear, acute, spreading, sessile; racemes drooping; flowers alternate.

3. *Epacris pumila*.

Lin. syst. 198. *suppl.* 138. *Forst. gen.* 20. t. 10. n. 3. *fl. austr.* n. 70.

Herbaceous; leaves ovate-oblong, imbricate; flowers sessile, subsolitary.

4. *Epacris rosmarinifolia*.

Forst. fl. austr. n. 69.

Shrubby; leaves linear, obtuse, rigid, sheathing; flowers solitary, lateral.

DESCRIPTIONS, &c.

These are all natives of New Zealand. The fruit of the first and second species is particularly described by *Gærtner*. The second is considered as comprehending two species by *Forster*.

1. Capsule superior, subturbinatè, rounded-five-cornered. Partitions inserted in the middle of the valves, and corresponding with the depressed grooves on the outside of the capsule. Receptacle in each cell one, free, oblong, cylindric-compressed a little, with a curved peduncle from the axis of the fruit, and hanging down from its other end, covered all round with many minute seeds, which are linear-oblong, attenuated to both ends, and rufescent.

^o *Gærtner*.

2. The fruit of this is a small, superior, juiceless spherical berry, terminated by a short awl-shaped style: the rind is coriaceous, thin and black: the pulp fungous, rather solid, white and five-celled. Receptacle in each cell one, filiform, short, inserted at one end into the axis of the fruit, at the other supporting two pendulous seeds: these are in pairs, small, ovate, attenuated upwards, plano-convex, rufescent. The leaflets of the calyx are ovate, concave and permanent: The corolla is salver-shaped and shrivelling; the tube loose and longer than the calyx, the border short and five-parted. Style filiform: stigma simple.

It differs from *Epacris* in having a simple stigma, a berry for a pericarp, and seeds in pairs. Hence *Gærtner* makes this an *Ardisia*^p.

3, 4. Both natives of New Zealand¹.

EPERVA. See *Dimorpha*.]

EPHEDRA, (of *Pliny*. From *ἐπί*, by, and *ὕδωρ*, water; expressive of the place of growth. *Linn.* According to this derivation, it should be *Ephydra*. The true derivation must be from *ἐφεδρα*, infessio.)

Lin. gen. n. 1136. *Reich.* 1242. *Schreb.* 1554. *Tourn.* 477.

Class. 22. 12. Dioecia Monadelphia.

Nat. order of *Coniferae*.

GENERIC CHARACTER.

* Male.

CAL. Ament compounded of one-flowered scales, few, roundish, concave, length of the perianth.

Perianth proper one-leafed, half-two-cleft, roundish, inflated, small, compressed: divisions obtuse.

COR. none.

STAM. Filaments seven, coalescing into a subulate pillar, divided at the tip, longer than the calyx.

Anthers roundish, turned outwards, of which four are inferior; the other three superior.

* Female.

CAL. Perianth five-fold, one placed on another, with alternate divisions, in an ovate figure: each one-leafed, somewhat ovate, two-parted: the exterior ones smaller.

COR. none.

PIST. Germs two, ovate, size of the last perianth, on which they are placed. Styles simple, filiform, short. Stigmas simple.

PER. none. Calycine scales all thickened, succulent, constituting a divided berry.

SEEDS two, ovate-sharp, on one side convex, on the other flat, compressed by the calyx covering them on every side.

ESSENTIAL CHARACTER.

MALE. Calyx of the ament two-cleft. Cor. none. Stam. seven. Anth. four inferior, three superior.

FEM. Cal. two-parted, five-fold. Cor. none. Pist. two. Seeds two, covered with a berried calyx.

SPECIES.

1. *Ephedra distachya*. Great Shrubby Horse-tail, or Sea-Grape.

Lin. spec. 1472. *Reich.* 4. 280. *hort. cliff.* 465. *Gouan. monsp.* 510. *Hall. herb.* n. 1664. *D'Affo aragon.* n. 968. *Dubam. arb.* 1. 220. t. 92.

Polygonum bacciferum maritimum minus. *Bauh. pin.* 15.

P. fruticans, botryoides, narbonense minus 2 Clus. *Barrel. ic.* 731. n. 2.—& majus 732. n. 3.

Uva marina monspeliensium. *Lob. ic.* 796.—major & minor. *Ger. emac.* 1116. 1. & 1117. 2. *Park. theat.* 450, 3 & 451. 4. *Raii hist.* 1638. 2. & 1639. 3.

Tragum. *Cam. hort.* 171. t. 46.

Peduncles opposite, aments in pairs.

[2. *Ephedra monostachya*. Small Shrubby Horse-tail.

Lin. spec. 1472. *syst.* 895. *Reich.* 280. *Gmel. fib.* 1. 171. t. 38. f. 1. & 3. p. 13. *Ann. ruth.* 178. & 354. t. 26.

E. polygonoides. *Pallas fl. ross.* 1. 2. p. 87. t. 83.

Peduncles several, aments solitary.

^p *Gærtn. fruct.*

^a *Forster*.

This genus is allied to *Equisetum*, as well in its habit and sheathed joints, as in its stamiferous column; it is perhaps still more nearly allied to *Gnetum* or *Salicornia*. It consists of leafless undershrubs, with cylindric jointed stems and branches; at each joint there are smaller branches either opposite, or in whorls; the joints of these are sheathed with a membrane two-cleft at top: peduncles from the sheaths solitary or several, one or many-flowered. The aments probably are formed of the very short joints; and the calyxes are to be regarded as little sheaths crowded together.

These plants vary extremely. Some, in the south of Europe, are only a hand in height, whilst others are three feet high. Linneus suspected that the Siberian plant might not be specifically different from this; and Professor Pallas is decidedly of that opinion: he suspects that Linneus had received only imperfect specimens from Siberia, and was led by them to make a second species.—Pallas thus describes it:—It is a *shrub*, varying wonderfully according to its station, sometimes a foot or eighteen inches high, sometimes only a finger's height, or even lower; prostrate or ascending. *Trunk* fibrous-woody, often thicker than a finger, with some branches spreading on the ground, and others, which are short and woody, rising, and subdivided copiously into rush-like branchlets. These are jointed, not at all succulent, sufficiently tenacious, glaucous-green, a little subdivided, sometimes more than a span in length, and straight, sometimes curled in a spiral, particularly in dry situations. The joints do not readily separate; the internodes are often an inch and half in length, very finely streaked, cylindric, terminated at top by two membranaceous, pubescent, emarginate scales. The plants are never hermaphrodite, but frequently barren, especially in a dry soil. The *male* plant is usually taller, with the aments of the upper joints commonly in pairs, opposite, on a peduncle issuing from one of the scales. The *male aments* are ovate, composed of three pairs of scales decussately imbricate, somewhat fleshy, concave-rounded, greenish; in the bosom of each scale is a two-valved corolla, somewhat membranaceous, putting forth a stamen, standing out beyond the scales, having seven or eight globular yellow anthers, in a kind of raceme. *Female aments* usually solitary, larger, ovate-acute, composed of four pairs of scales, the upper ones gradually smaller. These scales, in a flourishing plant, when ripe, become turgid, succulent, and of a beautiful scarlet colour, having two ovate-acute, plano-convex, brownish gray seeds between the upper and most swelling scales. In dry soils, the scales continue almost the same, juiceless, yellowish-gray when ripe, with immature fruits, which have usually one seed only, and that barren.—It is found in most of the southern parts of the vast Russian dominions; is common from the Volga to the Lena, and southwards to Persia and India. The berries ripen in July and August; they are sweetish, mucose, and leave a little heat in the throat: they are eaten by the Russian peasants, and by the wandering hords of all great Tartary; the Calmucs and other Tartars also use them medicinally, in catarrhs, rheumatisms, &c.

The European plant was cultivated here before 1570, by Matthias de L'Obel, and flowers in June and July. The Siberian was introduced about 1772, by Messrs. Kennedy and Lee, and flowers from September to November.*

PROPAGATION AND CULTURE.

These may be propagated by offsets, which the plants send forth in great plenty, for the roots creep under ground, and send forth suckers, which may be taken off to transplant in the spring. They love a pretty moist strong soil, and will endure the cold of our ordinary winters very well in the open air. Some of these plants were formerly preserved in

* Jussieu.

* Hort. kew.

pots, and were housed in winter, but by later experience they are found to thrive better in the full ground.

EPHEMERUM. See [*Commelina*, *Eranthemum*, *Helonias*, *Lysimachia*, &c.] *Tradescantia*.

[EPHIELIS. (From *Επιελις*, *calyculus*, vel simile quiddam in corona. So called from the nectary forming a sort of crown to the corolla.)

Lin. gen. Schreb. n. 647.

Mataiba. Aubl. t. 128.

Class. 8. 1. Octandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth one-leaved; five-parted; spreading; segments roundish, acute.

COR. Petals five, having claws, roundish; spreading; emarginate with a point, the length of the calyx.

Nectary of ten scales, a pair to each petal fastened to the base, roundish, villose, smaller than the petals.

STAM. Filaments eight, bristle-shaped; longer than the corolla, inserted into a gland. Anthers four-cornered-roundish.

PIST. Germ ovate, surrounded by a gland. Style none. Stigma blunt.

PER. Capsule oblong, compressed, grooved on both sides, one-celled, two-valved.

SEEDS two; kidney-form, fastened to one of the valves in the middle one above the other.

ESSENTIAL CHARACTER.

Cal. five-parted. Pet. five, with claws. Nect. ten scales, two to each petal. Caps. oblong, one-celled, two-valved, two-seeded.

SPECIES.

1. *Ephielis guianensis*.

Lin. syst. ed. Gmel. 2. p. 611.

Mataiba guianensis. Aubl. guian. 1. 331. t. 128.

DESCRIPTION, &c.

1. This is a tree fifty or sixty feet high, very much branched at top; the middle branches, or those in the centre, being the highest, and standing perpendicular: the lower ones are more inclining and horizontal, and spread out to a great distance: they divide into many branchlets, furnished with alternate leaves, each of which is pinnated: the pinnules opposite, from four to six in number, entire, oval, pointed, of a smooth surface, and of a bright green: these pinnules or leaflets are sometimes eight inches in length. The flowers grow from the bosoms of the leaves on long pedicels, divided at their extremities into several smaller ones: these flowers are very small, and white. This tree grows in the forests of Guiana, and there flowers in the month of October.

EPIBATERIUM. (From *επι* and *βαττω*, *inscendo*. This being a climbing plant. *Επιβατηριον*, is a machine for climbing walls.)

Forst. gen. 54. Lin. gen. Schreb. n. 1435.

Class. 21. 6. Monoecia Hexandria.

GENERIC CHARACTER.

* Male flowers.

CAL. Perianth double; deciduous. Outer six-leaved, very small, flat. Inner three-leaved, three times the size of the other; with ovate, spreading leaflets.

COR. Petals six, less than the inner calyx, roundish: three outer, interposed between the calycine leaflets, three inner.

STAM. Filaments six, capillary, bowed inwards, the length of the petals. Anthers roundish.

* Female flowers on the same plant.

CAL. and COR. as in the male.

PIST. Germs three, subglobular. Styles three, bowed inwards, very small. Stigmas compressed, spreading.

PER. Drupes three, subglobular, mucronate, with the permanent styles.

SEED. Nut kidney-form, compressed, slightly grooved.

ESSENTIAL CHARACTER.

Cal. double: outer six-leaved, small; inner three-leaved, large. Pet. six, three outer, between the calycine leaflets; three inner. Drupes three subglobular, mucronate, with the three permanent styles; inclosing a kidney-form nut.

SPECIES.

SPECIES.

1. *Epibaterium pendulum*.

Forst. gen. 108.]

EPIDENDRUM. (ἐπί δένδρον, from its growing upon trees.)

Lin. gen. n. 1016. [Reich. n. 1101. Schreb.

1377. H. P. B. 127. Juss. 66. Gærtn. t. 14.

Smith rar. 14, 15. Vanilla Plum. 28. Juss. 66.

Mill. dict.

Class. 20. 1. Gynandria Diandria.

Nat. order of Orchideæ.

GENERIC CHARACTER.

CAL. Spathes vague. Spadix simple.

Perianth none.

COR. Petals five, oblong, extremely long, very spreading.

Nectary tubular at the base, top-shaped, placed downwards within the petals, with an oblique two-cleft mouth; the superior lip very short, three-cleft; the inferior lengthened into a point.

STAM. Filaments two, very short, sitting on the pistil.

Anthers covered by the upper lip of the nectary.

PIST. Germ slender, long, twisted, inferior; Style very short, fastened to the upper lip of the nectary. Stigma obscure.

PER. Silique extremely long, columnar, fleshy.

SEEDS numerous, extremely small.

OBS. Most of the species are parasitic plants growing on trees.

ESSENTIAL CHARACTER.

Nectary turbinate, oblique, reflex. Cor. spreading.

Spur none.

SPECIES.

* Climbing.

1. *Epidendrum Vanilla*. *Vanilla* or *Vanilloe*.

Lin. spec. 1347. Reich. 4. 34. mat. med. 195.

Swartz obs. 324. Brown. jam. 326. Blackw.

t. 590. Plum. ic. 188. Pluk. alm. t. 320.

f. 4. Merian. surin. t. 25. (Vanilla.) Catesb.

car. 3. t. 7. (Volubilis.)

Vanilla mexicana. Mill. dict. n. 1.

[Lobus oblongus aromaticus. Clus. exot. 72. Sloan. jam. 1. 180.—arom. subfuscus terebinthi corniculis similis. Bauh. pin. 404.

Volubilis filiquosa mexicana, fol. plantagineis. Raii hist. 1330.

Leaves ovate-oblong, nerved, sessile, cauline, tendrils spiral.

2. *Epidendrum Flos æris*.

Lin. spec. 1348. syst. 817. Reich. 4. 35. æt.

ups. 1740. p. 37. Kæmpf. amæn. 868. t. 869.

f. 1.

Stem columnar, somewhat branched, leaves lanceolate, petals linear, obtuse.

** Stem upright, leafy.

3. *Epidendrum tenuifolium*.

Lin. spec. 1348. Reich. 4. 35. Rheed. mal. 12. t. 5.

Leaves on the stem subulate, channelled.

4. *Epidendrum spatulatum*.

Lin. spec. 1348. Reich. 4. 35. Rheed. mal. 12.

t. 3. Rudd. elys. 2. 222. f. 7. Rumph. amb.

6. 941. t. 44. f. 1. (Angræcum).

Helleborine amplissimo fol. vario. Plum. spec. 9. ic. 180. f. 2.

Leaves on the stem oblong, alternate, obtuse, veinless, lip of the nectary bifid and divaricate.

5. *Epidendrum furvum*.

Lin. spec. 1348. Reich. 4. 36. Rudd. elys. 2. 122.

f. 8. Raii suppl. 590. (Thalia.) Rumph.

amb. 6. 104. t. 46. f. 1. (Angræcum).

Caulescent; leaves imbricate, lanceolate; racemes axillary.

6. *Epidendrum coccineum*.

Lin. spec. 1348. Reich. 4. 36. Jacqu. amer. 29.

t. 135. piët. 109. t. 205.

Helleborine coccinea multiflora. Plum. spec. 9. ic. 180. f. 1.

Leaves on the stem ensiform, obtuse, peduncles one-flowered, axillary, crowded.

7. *Epidendrum secundum*.

Lin. spec. 1349. Reich. 4. 36. Swartz obs. 325.

Jacqu. amer. 224. t. 137. piët. 109. t. 207.

Plum. spec. 179. ic. 84. f. 1. (Ophrys.)—

spec. 9. ic. 148. f. 1. (Helleborine.) Jacqu.

8. *E. anceps*. Jacqu. amer. piët. t. 208.

Leaves on the stem oblong, emarginate, stem compressed, spike directed one way, tube of the nectary length of the corolla.

8. *Epidendrum lineare*.

Lin. spec. 1349. Reich. 4. 36. Jacqu. amer. 29.

t. 131. f. 1. piët. 108. t. 201. Swartz obs.

326.

Helleborine tenuifolia repens. Plum. spec. 9. ic.

182. f. 1.

Leaves on the stem distich, linear, obtuse, emarginate, stem simple, flowers terminating, in a sort of spike, lip entire.

9. *Epidendrum punctatum*.

Lin. spec. 1349. Reich. 4. 36.

Helleborine ramosissima, cauliculis & floribus maculosis. Plum. spec. 9. ic. 187.

Leaves lanceolate, nerved; sheaths imbricate; scape panicled, and corollas dotted.

10. *Epidendrum caudatum*.

Lin. spec. 1349. Reich. 4. 37.

Helleborine ramosissima, caulibus & floribus maculosis. Plum. spec. 9. ic. 177.

Leaves lanceolate, nerved, scape panicled, petals spotted, tailed, two very long.

11. *Epidendrum ovatum*.

Lin. spec. 1349. Reich. 4. 37. Rheed. mal. 12.

t. 7. Rudd. elys. 2. 223. f. 4. Raii suppl.

590. n. 40.

Angræcum minus album. Rumph. amb. 6. 99.

t. 43. f. 1.

Leaves on the stem ovate, acute, stem-clasping, nerved, scapes panicled.

12. *Epidendrum ciliare*.

Lin. spec. 1349. Reich. 4. 37. Jacqu. amer.

214. t. 179. f. 89. piët. 110. t. 209.

Helleborine graminea, fol. rigidis carinatis. Plum. ic. 179. f. 2.

Leaves oblong, veinless; lip of the nectary three-parted, ciliate, the middle segment linear; stem two-leaved.

13. *Epidendrum nocturnum*.

Lin. spec. 1349. syst. 818. Reich. 4. 37. Swartz

obs. 327. Jacqu. amer. 225. t. 139. piët. t. 210.

Catesb. car. 2. t. 68. (Viscum).

Leaves oblong, veinless; lip of the nectary three-parted, quite entire, the middle segment linear; stem many-leaved.

14. *Epidendrum cucullatum*.

Lin. spec. 1350. Reich. 4. 37.

Helleborine flor. albis cucullatis. Plum. spec. 9. ic. 179. f. 1.

Leaves subulate; scape one-flowered; lip of the nectary ovate, ciliate, acuminate; petals elongated.

15. *Epidendrum teres*.

Lin. syst. 818. Thunb. jap. 30.

Stem sheathed, decumbent, leaves columnar.

*** Scape naked, leaves radical.

16. *Epidendrum nodosum*.

Lin. spec. 1350. Reich. 4. 38. hort. cliff. 430.

æt. ups. 1740. p. 36. Swartz obs. 328. Jacqu.

amer. 226. t. 140. piët. 110. t. 213. Herm.

par. t. 187. Pluk. alm. t. 117. f. 6. Sloan.

jam. 1. 251. n. 11. t. 121. f. 3. (Viscum).

Leaf single, subradical, spadix containing about four flowers.

17. *Epidendrum carinatum*.

Lin. spec. 1350. Reich. 4. 38. æt. ups. 1740.

p. 36. Pet. gaz. 44. f. 10. (Bontia).

Leaves oblong, obtuse, compressed, jointed.

18. *Epidendrum aloifolium*.

Lin. spec. 1350. Reich. 4. 38. æt. ups. 1740.

p. 36. Rheed. mal. 12. t. 8. Raii suppl. 572.

n. 46.

Leaves oblong, obtuse, broader at the end.

19. *Epidendrum guttatum*.

Lin. spec. 1351. Reich. 4. 38. æt. ups. 1740.

p. 37. Sloan. jam. 1. 251. t. 148. f. 2. (Vis-

cum.)

- Helleborine fol. carnosis carinatis & fulcatis. Plum. spec. 9. ic. 182. f. 2?
Leaves lanceolate, channelled, petals wedge-shaped, retuse.
20. *Epidendrum juncifolium*.
Lin. spec. 1351. Reich. 4. 39.
Helleborine maculosa, fol. juncis & fulcatis. Plum. spec. 9. ic. 184. f. 2.
Leaves subulate, furrowed, scape and petals dotted, lip without dots, dilated.
21. *Epidendrum scriptum*.
Lin. spec. 1351. Reich. 4. 39. Rumph. amb. 6. 95. t. 42. (Angræcum).
Leaves ovate-oblong, three-nerved, flowers racemed, spotted.
22. *Epidendrum retusum*.
Lin. spec. 1351. Reich. 4. 39. Rheed. mal. 12. t. 1. Rudb. elyf. 2. 220. t. 5. Raii suppl. 588. n. 33.
Leaves linear, retuse at the end, in two rows, flowers racemed, spotted.
23. *Epidendrum amabile*.
Lin. spec. 1351. Reich. 4. 39. Rumph. amb. 6. 99. t. 43. (Angræcum).
Leaves broad-lanceolate, veinless, petals lateral, orbiculate.
24. *Epidendrum cochleatum*.
Lin. spec. 1351. Reich. 4. 39. Ait. hort. kew. 3. 303. Jacqu. rar. 2. Catesb. car. 2. t. 88. Swartz obs. 329.
Helleborine cochleato flore. Plum. spec. 9. ic. 185. f. 2.
Leaves oblong, double, smooth, streaked, growing on the bulb, scape many-flowered, nectary cordate.
25. *Epidendrum tuberosum*.
Lin. spec. 1352. Reich. 4. 40. Lour. cochinch. 523?
Helleborine purpurea, tuberosa radice. Plum. spec. 9. ic. 186. f. 2.
Leaves broad-lanceolate, nerved, membranaceous, growing on the bulb, scape sheathed, nectary boat-form, bifid.
26. *Epidendrum pusillum*.
Lin. spec. 1352. Reich. 4. 40. mant. 491.
Leaves ensiform, somewhat fleshy, scape few-flowered.
27. *Epidendrum ensifolium*.
Lin. spec. 1352. Reich. 4. 40. Lour. cochinch. 524. Smith. spicil. 2. 22. t. 24. Thunb. in Linn. trans. 2. 327.
Limodorum ensatum. Thunb. jap. 29. Banks ic. select. Kämpf. t. 3. Kämpf. amoen. 863. (Ran.)
Stem round, even, leaves ensiform, petals lanceolate, lip lanceolate, recurved, dotted.
28. *Epidendrum moniliforme*.
Lin. spec. 1352. Reich. 4. 41. aet. upf. 1740. p. 37. Thunb. jap. 30. Kämpf. amoen. t. 864.
Stem round, jointed, streaked, necklace-form, naked, quite simple, leaves linear, acute.
29. *Epidendrum ophioglossoides*.
Lin. spec. 1353. Reich. 4. 41. Jacqu. amer. 225. t. 133. f. 2. piët. 110. t. 211. (See n. 75.)
Helleborine ophioglossifolia. Plum. spec. 9. ic. 176. f. 3.
Stem one-leaved, flowers racemed, pointing one way.
30. *Epidendrum ruscifolium*.
Lin. spec. 1353. Reich. 4. 41. Jacqu. amer. 226. t. 133. f. 3. piët. 110. t. 212. Swartz obs. 331.
Helleborine rusci majoris folio. Plum. spec. 9. ic. 176. f. 2.
Stem one-leaved, flowers from the sinus of the leaf aggregate.
31. *Epidendrum graminifolium*.
Lin. spec. 1353. Reich. 4. 41.
Helleborine graminea repens biflora. Plum. spec. 9. ic. 176. f. 1.
Stem one-leaved, flowers from the sinus of the leaf in pairs.
32. *Epidendrum capense*.
Lin. f. 819. suppl. 407.
Scape naked, leaves imbricate in two rows, linear, obtuse, flowers directed one way, horn very long.
33. *Epidendrum fuscum*. Brown *Epidendrum*.
Smith spicil. 2. 21.
Helleborine purpurea umbellata. Plum. cat. 9. Ic. Burm. 179. t. 184. f. 1?
Stems simple, leaves oval, peduncle terminating, elongated, scaly, lip of the nectary five-lobed, the middle lobe minute.
34. *Epidendrum tripterum*. Triangular-fruited *Epidendrum*.
Smith ic. rar. t. 14.
Leaves from a bulb and from the root sword-shaped, stalks radical sheathed, many-flowered, germ three-winged, lip equal to the petals.
35. *Epidendrum Barringtoniæ*. Large-flowered *Epidendrum*.
Smith. ic. rar. t. 15.
Leaves broad-lanceolate, nerved, arising from a bulb, peduncles radical, mostly single-flowered, lip fringed, column with a cover.
36. *Epidendrum claviculatum*.
Swartz prodr. 120.
Cerei affinis scandens planta aphylla. Sloan. jam. 2. 160. t. 224. f. 3, 4.
Stem climbing, round, branching, leaves sessile, half-stem-clasping, acute, concave, recurved, rigid.
37. *Epidendrum ramosum*.
Swartz prodr. 120. Jacqu. amer. 221. t. 132. piët. t. 202.
Stem very branching, suffrutescent, leaves linear, emarginate, racemes terminating, compressed.
38. *Epidendrum nutans*.
Swartz prodr. 121.
Stem simple, leaves ovate-lanceolate, nerveless, stem-clasping, spike terminating, nodding, lip of the nectary three-lobed, the middle lobe three-toothed.
39. *Epidendrum umbellatum*.
Swartz prodr. 121.
E. difforme? Jacqu. amer. t. 136. piët. t. 206.
Stem simple, leaves ovate, emarginate, stem-clasping, veinless, flowers terminating, umbelled.
40. *Epidendrum anceps*.
Swartz prodr. 121.
Leaves cordate-lanceolate, stem-clasping, horizontal, raceme terminating, compressed, ancipital, subflexuose, flowers distich, inner petals capillary, with a three-lobed lip.
41. *Epidendrum rigidum*.
Swartz prodr. 121. Jacqu. amer. 222. t. 134. piët. t. 204.
Leaves oblong, obtuse, sheathing, raceme terminating, compressed, ancipital, flowers distich, larger than the spathe, lip entire, cordate-ovate, acute.
42. *Epidendrum diffusum*.
Swartz prodr. 121.
Leaves oblong, stem-clasping, stem ancipital, panicle terminating, very much branched, diffused, lip entire, acuminate.
43. *Epidendrum montanum*.
Swartz prodr. 121.
Leaves lanceolate, flat, recurved, spreading, submembranaceous, raceme terminating, simple, flowers pointing one way, lip trifid.
44. *Epidendrum ferrulatum*.
Swartz prodr. 121.
Stems aggregate, subdiphyllous, leaves lanceolate, keeled, ferrulate, raceme terminating, flowers distich.
45. *Epidendrum teretifolium*.
Swartz prodr. 121.
Leaves semicylindric, stem one-flowered, lip three-sided at the tip.
46. *Epidendrum globosum*.
Swartz prodr. 121. Jacqu. amer. 221. t. 133. f. 1. piët. t. 203.
Leaves cylindric, channelled, flowers terminating, subsolitary, lip ovate, acute, capsules globular.
47. *Epidendrum fertularioides*.
Swartz prodr. 122.
Stem filiform, creeping, jointed, leaves lanceolate, peduncles one-flowered from radical sheaths.
48. *Epidendrum testæfolium*.
Swartz prodr. 122.
Stem creeping, leaves incumbent, elliptic, concavo-convex, keeled, flowers sessile under the leaves.

49. *Epidendrum undulatum*.
Swartz prodr. 122.
E. carthagenense? Jacqu. amer. 228. t. 133. f. 4. pict. t. 214.
Viscum. Sloan. jam. 1. 250. t. 148. f. 1.
Satyrium. Brown. jam. 326. 15.
Helleborine maculosa, &c. Plum. ic. 178. f. 2.
Leaves elliptic, acute, scape sarmentose, very much branched, petals ovate, clawed, obtuse, lip dilated, emarginate, waved.
50. *Epidendrum variegatum*.
Swartz prodr. 122.
E. tetrapetalum? Jacqu. amer. t. 132. pict. t. 216.
Helleborine fol. carnosis carinatis? Plum. ic. 177. t. 182. f. 2.
Leaves lanceolate, keeled, channelled, cartilaginous-ferrate on the edge, sheaths imbricate, scapes sheathing, with a simple raceme, lip cruciate, two-lobed.
51. *Epidendrum utricularioides*.
Swartz prodr. 122.
Leaves lanceolate, marked with lines, flat, scape panicled, lip large, heart-shaped, horn very short.
52. *Epidendrum triquetrum*.
Swartz prodr. 122.
Leaves three-sided, cultrate, compressed at the tip, lanceolate, acute, scape simple, lip heart-shaped, ovate, sides emarginate.
53. *Epidendrum sessile*.
Swartz prodr. 122.
Leaves compressed at the base, broader at top, lanceolate-linear, obtuse, veinless, peduncles radical, very short, one-flowered.
54. *Epidendrum flabelliforme*.
Swartz prodr. 123.
Leaves compressed at the base, dilated at top, ovate-lanceolate, acute, flat, nerved, peduncles one-flowered, elongated.
55. *Epidendrum fubulatum*.
Swartz prodr. 123.
Leaves awl-shaped, grooved, peduncles sheathed, radical, many-flowered.
56. *Epidendrum fatyrioides*.
Swartz prodr. 123.
Leaves subulate-cylindric, scape few-flowered, corollas ventricose at the base in front.
57. *Epidendrum tribuloides*.
Swartz prodr. 123.
Leaves pedicelled, lanceolate, obtuse, emarginate, peduncles very short, capsules globose, echinate.
58. *Epidendrum corniculatum*.
Swartz prodr. 123.
Leaves pedicelled, wedge-shaped, oblong, peduncles radical, one-flowered, corollas acuminate, curved.
59. *Epidendrum Lanceola*.
Swartz prodr. 123.
Leaves pedicelled, lanceolate, acute, peduncles from radical sheaths, two-flowered.
60. *Epidendrum angustifolium*.
Swartz prodr. 123.
Leaf linear, growing upon the bulb, scape panicled.
61. *Epidendrum palmifolium*.
Swartz prodr. 123.
Leaves broad-lanceolate, nerved, membranaceous, growing on the bulb, peduncles radical, sheathed, many-flowered, nectary boat-shaped, entire, reflex.
62. *Epidendrum altissimum*.
Swartz prodr. 123. Jacqu. amer. 229. t. 141. pict. t. 215.
Leaves lanceolate, growing on the bulbs, scape very much branched, sarmentose, petals oblong, lanceolate, acute, lip obcordate, shorter than the petals.
63. *Epidendrum fragrans*.
Swartz prodr. 123. Ait. hort. kew. 3. 304.
E. cochleatum. Curt. magaz. 152.
Leaf broad-lanceolate, nerveless, growing on the bulb, scape many-flowered, abbreviated, lip heart-shaped.
64. *Epidendrum sanguineum*.
Swartz prodr. 124. Sloan. jam. 1. 250. n. 10. t. 121. f. 2. (Viscum). Brown. jam. 324. 3. (Satyrium).
Leaves in pairs, oblong, growing on the bulb, scape many-flowered, subflexuose, lip roundish, waved, emarginate, horn adnate.
65. *Epidendrum labiatum*.
Swartz prodr. 124.
Leaves radical, oblong, middle bulb solitary, one-leaved, scapes few-flowered, lip oblong, with a fleshy corpuscle growing to it at top.
66. *Epidendrum polybulbon*.
Swartz prodr. 124.
Stem creeping, bulb bearing, bulbs two-leaved, one-flowered, flower peduncled, lip heart-shaped.
67. *Epidendrum proliferum*.
Swartz prodr. 124.
Caulescent, leaves distich, subimbricate ovate, bulbs from the sheaths of the leaves two-leaved, flowers axillary, sessile.
68. *Epidendrum vestitum*.
Swartz prodr. 124.
Stem leafless, imbricate all round with sheaths, roundish, bulb-bearing, bulbs growing on the leaf, flowers crowded from the sheaths of the stem.
69. *Epidendrum vomiforme*.
Swartz prodr. 124.
Caulescent, leaves growing on the bulbs, ovate-acuminate, convex, channelled, three-sided beneath, scapes from the bosom of the leaves.
70. *Epidendrum echinocarpon*.
Swartz prodr. 124.
Limodorum pendulum. Aubl. guian. 818. t. 322.
Stem compressed, decumbent, one-flowered, leaves imbricate all round, distich, ovate, capsules muricate.
71. *Epidendrum trichocarpon*.
Swartz prodr. 124.
Stem compressed, round, rooting, leaves imbricate all round, distich, linear, capsules tomentose.
72. *Epidendrum glaucum*.
Swartz prodr. 124.
Stem compressed, almost upright, many-flowered, leaves imbricate all round, distich, broad-lanceolate, very smooth, glaucous beneath, capsules naked.
73. *Epidendrum graminoides*.
Swartz prodr. 125.
Stem erect, compressed, many-flowered, leaves imbricate all round, distich, remote, linear, peduncles longer.
74. *Epidendrum micranthum*.
Swartz prodr. 125.
Stem one-leaved, leaf broad-lanceolate, raceme very long, filiform, flowers pointing one way, roundish, six-cornered.
75. *Epidendrum trigoniflorum*.
Swartz prodr. 125.
E. ophioglossoides. Jacqu. amer. t. 133. f. 3. pict. t. 211. (See n. 29.)
Stem one-leaved, leaf oblong lanceolate, raceme the length of the leaves, flowers mostly pointing one way, three-cornered.
76. *Epidendrum racemiflorum*.
Swartz prodr. 125.
Stem one-leaved, leaf ovate, raceme longer than the leaves, flowers pointing one way, inner petals ovate.
77. *Epidendrum alpestre*.
Swartz prodr. 125.
Stem one-leaved, leaf ovate-lanceolate, racemes loose, keels of the capsules muricate.
78. *Epidendrum laxum*.
Swartz prodr. 125.
Stem one-leaved, leaf oblong, raceme the length of the leaves, inner petals awl-shaped, lip ovate, capsules naked.
79. *Epidendrum ovale*.
Swartz prodr. 125.
Stem one-leaved, leaf ovate, acuminate, raceme pressed close, many-flowered, petals roundish, the inner ones remote in front at the base, capsules pedicelled.
80. *Epidendrum pulchellum*.
Swartz prodr. 125.
Stem one-leaved, leaf roundish, acute, raceme loose, few-flowered, petals acuminate, ciliate, the inner one crossed at the tip.
81. *Epidendrum tridentatum*.
Swartz prodr. 125.
Stem one-leaved, leaf ovate-acute, three-toothed at the tip,

- tip, raceme many-flowered, flowers three-sided, acuminate, petals of the nectary erect, bowed inwards.
82. *Epidendrum cochlearifolium*.
Swartz prodr. 126.
Stem one-leaved, leaf orbiculate, concavo-convex, raceme few-flowered.
83. *Epidendrum funale*.
Swartz prodr. 126.
Leafless, filiform, rooting, peduncle two-flowered, lip two-lobed, horn very long, awl-shaped.
84. *Epidendrum filiforme*.
Swartz prodr. 126.
Leafless, filiform, rooting, peduncles subtriflorous, lip ovate, horn very short, beaded at the tip.
85. *Epidendrum concretum*.
Jacqu. amer. 228.
Leaves radical, lanceolate, acute, nectary concrete with the petals.
86. *Epidendrum Cebolleta*.
Jacqu. amer. 230. t. 131. f. 2. pict. t. 217.
Leaf radical, single, awl-shaped, knot rooted, raceme compound.
87. *Epidendrum spathulatum*.
Retz. obs. 6. 43.
Leaves bifarious, alternate, approximating, præmorse, with a doubled tip, coriaceous, scarcely a foot long.
88. *Epidendrum variegatum*.
Retz. obs. 6. 44. Rumph. amb. 6. 93. t. 41. f. 3?
Leaves alternate, spreading, sheathing, ovate acute, three-nerved, waved, smooth, variegated.
89. *Epidendrum Calceolariaë*.
Retz. obs. 6. 45.
Leaves bifarious, alternate, remote, spreading very much, awl-shaped, thick, smooth.
90. *Epidendrum hexandrum*.
Retz. obs. 6. 45.
Leaves bifarious, alternate, spreading, a little sessile, ending in sheaths, somewhat remote, lanceolate, emarginate with a point, rigid.
91. *Epidendrum Ophrydis*.
Retz. obs. 6. 46.
Leaves alternate, sheathing, from erect spreading, ovate, acute, quite entire, nerved, smooth, a little bulbed on the surface, membranaceous, shorter than the scape, ending in tubular, keeled, smooth sheaths.
92. *Epidendrum Supplex*.
Retz. obs. 6. 47.
Leaves crowded, sword-shaped, sheathing, compressed, quite entire, acute, smooth, fleshy.
93. *Epidendrum orchideum*.
Retz. obs. 6. 48.
Leaves bifarious, alternate, sessile, spreading, lanceolate, quite entire, acute, smooth, fleshy, rigid.
94. *Epidendrum pusillum*.
Retz. obs. 6. 49.
Shoots in bundles, appressed, a span long, racemes solitary, simple, upright, compressed, naked at bottom, toothletted towards the tip, smooth.
95. *Epidendrum complanatum*.
Retz. obs. 6. 50.
Leaves alternate, sessile, spreading, linear-moon-shaped, retuse, smooth, upper surface concave, lower keeled, fleshy.
96. *Epidendrum clavatum*.
Retz. obs. 6. 50.
Leaves alternate, sessile, spreading, a little linear-club-shaped, with two unequal teeth at the end, smooth, flat, having a large nerve, depressed above, permanent beneath.
97. *Epidendrum subulatum*.
Retz. obs. 6. 51.
Leaves alternate, erect, sessile, awl-shaped, cylindric, smooth, acute; sheaths obtuse, margined, smooth, with minute dark-purple dots, short.
98. *Epidendrum nudum*.
Retz. obs. 6. 52.
Stem none, peduncles simple, one-flowered, with two or three smooth membranaceous tubular sheaths, investing the younger peduncles with an oblique mouth, caducous.
99. *Epidendrum tomentosum*.
Retz. obs. 6. 53.
Leaves from the bulbs usually four, seldom two or three, alternate, almost erect, bifarious at the base, half-

- sheathing the bulb, oblong, quite entire, acute, concave, recurved at the tip, smooth, eight-nerved, fleshy.
100. *Epidendrum bidentatum*.
Retz. obs. 6. 54.
Leaves sheathing each other, three or four, seldom five, sword-shaped, bifarious, sessile, quite entire, with two sharp toothlets at the tip, smooth on both sides, keeled at the back.
101. *Epidendrum lycopodioides*.
Retz. obs. 6. 55.
Stems crowded at the roots, pendulous, simple, compressed, leaves alternate, bifarious, sheathing one another at the base, pressed close above the sheaths, lanceolate, acute, a little margined, smooth, fleshy.
102. *Epidendrum longiflorum*.
Retz. obs. 6. 55.
Leaves growing to the bulbs, solitary, subpetioled, erect, lanceolate-retuse, margin quite entire, recurved, smooth, fleshy, rigid, brittle.
103. *Epidendrum Flabellum*.
Retz. obs. 6. 57.
Leaves solitary, one from each bulb, erect, petioled, lanceolate oblong, quite entire, emarginate, a little recurved, obscurely nerved, smooth, fleshy, rigid.
104. *Epidendrum saaronicum*.
Retz. obs. 6. 58.
Leaves alternate, subbifarious, sessile, spreading, lanceolate, flattish, above even, streaked slightly, and having five more evident nerves, beneath smooth, with a small groove along the midrib, but no streaks, emarginate, fleshy, rigid.
105. *Epidendrum plantaginifolium*.
Retz. obs. 6. 60.
Leaves bifarious, sheathing each other, erect, linear-three-sided, slightly channelled, sharpish, smooth, fleshy, narrow at the base next the sheaths.
106. *Epidendrum sessile*.
Retz. obs. 6. 60.
Leaves scattered from sessile bulbs, spreading, subpetioled, retuse, above smooth, a little channelled, beneath convex, fleshy.
107. *Epidendrum liliifolium*.
Retz. obs. 6. 61.
Leaves from the bulbs subpetioled, erect at the base, more spreading at the tip, linear-lanceolate, sharpish, smooth, keeled at the back, membranaceous, scarcely rigid.
108. *Epidendrum Calceolariaë terrestre*.
Retz. obs. 6. 63.
Leaves spreading, bifarious, sessile, ending in sheaths, oblong-lanceolate, quite entire, slightly and obliquely emarginate, above even, shining, beneath smooth, with from nine to fourteen nerves, rigid, the lower ones short, broader, the upper longer, and scarcely an inch broad.
109. *Epidendrum Flos aeris?*
Retz. obs. 6. 64.
Leaves from bulbs, ovate-oblong, acute, flat, fleshy.
110. *Epidendrum triste*.
Forst. flor. austral. n. 314.
Leaves cylindric, empty, sheaths fistulose, peduncles opposite to the leaves, corymbed, perforating the sheath, lip of the nectary entire, spatulate-heart-shaped.
111. *Epidendrum crispatum*.
Forst. flor. austral. n. 315.
Leaves cauline, round, filiform, subincurved, empty, sessile, raceme quite simple, lip of the nectary with the middle segment revolute, waved, crenate.
112. *Epidendrum equitans*.
Forst. flor. austral. n. 316.
Leaves equitant, ensiform-compressed, keeled, acuminate, scape naked, raceme spiked, nodding, filiform.
113. *Epidendrum Myolurus*.
Forst. flor. austral. n. 317.
Leaves sheathing at the base, obliquely divaricate, linear, obtuse, channelled, scape naked, raceme spiked, nodding, filiform.
114. *Epidendrum biflorum*.
Forst. flor. austral. n. 318.
Leaves distich, linear-lanceolate, acute, peduncles two-flowered, solitary, perforating the sheaths of the leaves, lip of the nectary trifid, acuminate.

115. *Epidendrum autumnale*.
Forst. flor. austral. n. 319.
Leaves cauline, lanceolate, nerved, crowded, sheathing,
peduncles terminating, scaly, paniced, lip of the nec-
tary erect, retuse.
116. *Epidendrum Fasciola*.
Forst. flor. austral. n. 320.
Leaves rooting, parasitical, bundled, linear, waved, scapes
several, racemed, lip of the nectary slipper-shaped,
with a spur.
117. *Epidendrum umbellatum*.
Forst. flor. austral. n. 321.
Runners creeping, leaves oval, fleshy, petioled, petioles
fixed into ovate angular-keeled apophyses, scape rooted,
umbel simple, one-sided, lowest petals elongated.
118. *Epidendrum resupinatum*.
Forst. flor. austral. n. 322.
Basaala-poulou-maravara. Rheed. malab. 12. t. 27.
Leaves cauline, petioled, ovate, acuminate, quite entire,
plaited, keeled, five-nerved, raceme simple, spiked,
flowers inverted, lower lip of the nectary toothed.
119. *Epidendrum Clypeolum*.
Forst. flor. austral. n. 323.
Leaf radical, roundish, cordate, cowed at the base, reflex
and sharp at the tip, scape almost erect, racemed, lower
lip of the nectary orbiculate, emarginate, very large.
120. *Epidendrum nervosum*.
Thunb. in Linn. trans. 2. 327.
Ophrys nervosa. Thunb. jap. 27.
Scape angular, leaves ovate, nerved, lip entire, reflex.
121. *Epidendrum striatum*.
Thunb. in Linn. trans. 2. 327.
Limodorum striatum. Thunb. jap. 28.
Scape angular, smooth, leaves sword-shaped, nerved, petals
lanceolate, lip oblong, flat.
122. *Epidendrum tessellatum*.
Roxb. pl. corom. 2. 34. t. 42.
123. *Epidendrum præmorsum*.
Roxb. pl. corom. 2. 34. t. 43. Rheed. mal. 12. t. 4.
124. *Epidendrum pendulum*.
Roxb. pl. corom. 2. 35. t. 44.

DESCRIPTIONS, &c.

The whole genus is obscure in its character, differences and synonyms; for the flowers in dried specimens can hardly be unfolded; the plants are cultivated with difficulty in gardens; and the species have not been sufficiently described by authors who have had an opportunity of seeing them in America and the East-Indies, their native places of growth.

Linneus had only thirty sorts in his species plantarum, and the number was not increased in the twelfth and thirteenth editions of the systema vegetabilium. In the fourteenth edition of the same work, two only are added by Murray from Jacquin, who has eleven other new species in his Stirpium americanarum historia. Swartz has forty-nine from the West-Indies, some of which are the same with Jacquin's. Retzius has twenty-three observed by Koenig in the East-Indies. And Forster has ten from the islands in the South seas. The number of sorts here registered amounts to 124, and doubtless there are many more, since Dr. Smith, in his elegant works, has figured two species from Jamaica, which escaped the research of the indefatigable Swartz. On a severer scrutiny, however, some of these numerous species may turn out to be varieties, and others to be the same species repeated.

Jacquin remarks, that all his species, particularly the smaller ones, become by age more or less caespitose, and run over the bark of trees with their numerous roots, fixing themselves into it with a considerable degree of firmness. They differ very much from each other in the structure of the flower, more indeed than several of the different genera of this order; and might be distinguished into several genera.—Linneus's character of the nectary is by no means sufficient to form an essential character; for it is horn-shaped, ovate, slightly keeled, pedicelled, &c. The corollas also have from two to five petals;

the anthers are from one to eight, and the capsules differ in their form. They are, however, all parasitical, and could not be divided into genera without difficulty, which after all would be too artificial: Swartz, therefore, has done better by casting the genus into eight subdivisions or sections. 1. Climbing. n. 39. 2. Stem leafy, upright. 40 to 49. 3. Stem creeping. 50, 51. 4. Stemless; with radical leaves. 52 to 62. 5. Leaves growing on the bulbs, 63 to 72. 6. Stem creeping, leaves imbricate. 73 to 76. 7. Stems one-leaved. 77 to 85. 8. Leafless. 86, 87.

Jussieu observes, that the petiole of the leaves is sometimes dilated into a bulb; and that the flowers are either in spikes or panicles, varying in their form.

1. The Vanilla is separated from the other Epidendrum by Plumier, Jussieu, Miller, and others.]

Stem trailing, somewhat like common Ivy, but not so woody, fastening itself to whatever tree grows near it, by small fibres or roots produced at every joint, by which it may receive nourishment, when cut or broken off from the root a considerable height above the ground. The leaves are as large as those of the common Laurel, but not quite so thick; they are placed alternate at the joints, which are six or seven inches asunder, and are of a lively green colour above, but paler underneath. The stems shoot into many branches, which also fasten themselves to the boughs of trees, and thus rise to the height of eighteen or twenty feet, spreading quite over smaller trees. The flowers are of a greenish yellow colour, mixed with white; and are succeeded by fruit six or seven inches long.

[Five divisions of the calyx (or the corolla, as Linneus calls it) are equal, large, and spreading, generally waving; the sixth, which is the inner one, is rolled up into a kind of funnel, with an unequal border; the flowers are in loose flexuose spikes, both axillary and terminating^a.

The pods grow in pairs, are generally the thickness of a child's finger, and about five or six inches in length; they are green at first, then yellowish, and turn of a brownish cast as they ripen. The stalk is moderately slender, and throws out a long winding tendril opposite to each of the lower leaves, by which it sticks to the branches, or bark of the tree; but after it gains the top, these become useless, and the place of each is supplied by a fellow leaf^b.

According to Swartz, the stem is subparasitical, climbing very high, rooting by means of simple fibres like tendrils, opposite to the leaves, subflexuose, leafy, subdivided at top, round, thick, succulent, smooth. Leaves sessile, or half-embracing, or somewhat sheathed, alternate, ovate, acuminate, half a foot long, entire, longitudinally nerved, very smooth, thick. Flowers peduncled, axillary, large, purple: peduncle axillary, solitary, one or two-flowered, short; with a sessile ovate leaflet or bracte under each flower. Siliques pendulous, half a foot long and more, smooth, one-celled, three-valved. Seeds roundish, black, shining.

The manner of growth and flowering, the size of the flowers, fruit, and lens-shaped, dark shining seeds, without any aril, distinguish this from the other species. Vanilla, with E. flos aeris and claviculatum, might be separated from the genus Epidendrum^c.

Native of South America and the Islands in old woods, in the moist shady parts of them.] In the bay of Campeachy, at Carthagen, the Caraccas, Honduras, Darien, Cayenne, &c. the fruit is gathered and preserved. Cultivated by Mr. Miller in 1759.

When it turns of a yellow colour, and begins to open, they gather it, and lay it in small heaps to ferment two or three days, in the same manner as is practised for the Cocoa or Chocolate pods; then they spread them in the sun to dry, and when they are about half dried, they flat them with their hands,

^a Jussieu.^b Browne.^c Swartz & Gærtn.

and afterwards rub them over with the oil of Palma Christi, or of the Cocoa; then they expose them to the sun again to dry; and afterwards they rub them over with oil a second time, then they put them in small bundles, covering them with the leaves of the Indian Reed, to preserve them.

These plants produce but one crop of fruit in a year, which is commonly ripe in may, fit for gathering, for they do not let them remain on the plants to be perfectly mature, because then they are not so fit for use; but when they are about half changed yellow, they esteem them better for keeping, than when they are changed to a dark brown colour, at which time the fruit splits, and shews a great quantity of small seeds, which are inclosed within it. While the fruit is green, it affords no remarkable scent, but as it ripens, it emits a most grateful aromatic odour. When the fruit begins to open, the birds attack it and devour all the seeds very greedily, but do not eat any other part of the fruit.

The fruits which are brought to Europe, are of a dark brown colour, about six inches long, and scarce an inch broad; they are wrinkled on the outside, and full of a vast number of black seeds, like grains of sand, of a pleasant smell, like Balsam of Peru.

The fruit is only used in England as an ingredient in Chocolate, to which it gives a pleasant flavour to some palates, but to others it is very disagreeable; but the Spanish physicians in America use it in medicine, and esteem it grateful to the stomach and brain, for expelling wind, to provoke urine, to resist poison, and cure the bite of venomous animals.

[The Spaniards, French and Italians not only use the Vanilla to give Chocolate a delicate smell, and agreeable flavour; but also to perfume snuffs and other substances. It yields a great quantity of oil and volatile salt^d.]

Mr. Miller has another species, which he calls *Vanilla axillaris*, and distinguishes by its oblong, blunt, compressed, jointed leaves, and axillary flowers. It was sent him from Carthage in New Spain, where it grows naturally. It has a climbing stalk, sending out roots from the joints, like the other, and mounting to a great height. The leaves, which come out singly at each joint, are oblong, smooth and jointed. The flowers come out from the side of the branches; they are shaped like those of the great Bee-Orchis, but are longer: the helmet is of a pale pink, and the lip is purple. It flowered in the Chelsea garden, but lived only one year.

There are two or three varieties of the common Vanilla, differing in the colour of their flowers, and the length of their pods.

[2. The flowers resemble a spider. It is a native of Java, and is parasitical^e. See n. 112.

3. Native of Malabar in the East-Indies.

4. Native of the East-Indies. Compare Catech. car. t. 68^f.—See n. 13.

5. Native of the East-Indies. The synonyms of Rheede and Rumphius belong to different plants; for they differ in the form of their leaves, the size of their flowers, &c.^g.

6. This is an elegant parasitical plant. Roots round, numerous, fibrous, ash-coloured. Stems several, scarcely attaining to a foot in height; before these spring the flowers come forth in the axils of the root-leaves; they also come out from the axils of the stem-leaves successively as the stems advance. On the sides of the stems are also knots or little roundish, compressed, smooth, wrinkled, spongy, green bulbs, terminated by a leaf. Leaves both at the root and stem subensiform, emarginate, obtuse, entire, veinless, shining, thickish, somewhat flaccid, converging at the base, flat above, from four to eight inches long. Peduncles filiform, whitish, tender, two inches long, one-flowered, axillary, commonly in pairs, or three together, with a few sheathing spathes. Flowers void of scent, the whole, with the germ, scarlet, agreeing in character with

E. lineare, n. 8. except that the petals are ovate-acuminate and concave. Lower lip of the nectary lanceolate-cordate, somewhat rigid, and almost upright. Anthers on each filament double, compressed. Germ linear, slender, much longer than the petals.

Native of Martinico, in moist woods, especially by the side of torrents^h; also in Jamaica, but not common. Cultivated at Kew in 1794.

7. Parasitical. Roots fibrous, white. Stem round at bottom, gradually compressed, leafy, pendulous. Leaves sessile, sheathing, alternate, spreading in two rows, the outmost tip emarginate, veinless. Peduncle scape-form, often two feet long, terminating, compressed, jointed as it were by the deciduous sheaths. Flowers terminating, in form of a corymb, nodding one way, pale red or brown. Spathes minute. Three of the petals ovate-lanceolate, spreading, two linear, bent down. Nectary longer than the petals: lip three-lobed, the middle lobe emarginate, ascending, spreading, the side ones smaller, emarginate. Column short, bifid at the tip, bearing two pedicelled anthers under a two-celled lid, and concealed within the tube of the nectary. Stigma in front, funnel-form. Capsule oblong, angular, three-valved.

It varies with a rounder and more compressed stem; leaves broader, or more acuminate; flowers terminating, or breaking out on the side; and tube of the nectary shorter or longer than the petalsⁱ.

Native of Martinico and Jamaica, in mountainous woods. Cultivated at Kew in 1794.

Swartz is of opinion that *E. anceps* of Jacquin is no more than a variety of this. Jacquin thus describes it. Parasitical, half a foot high, or somewhat more. Roots fibrous, round. Stem compressed, ancipital at top, with few leaves. Leaves oblong, blunt, coriaceous, alternate, sheathing. Spadix lateral, few-flowered. The flowers have the same character with *E. difforme* (see n. 42.), but the tube of the nectary is little more than half the length of the petals, and the lower lip is half three-lobed; the lobes rounded, almost equal, the middle one slightly two-toothed. Germ equal to the petals. Native of Martinico.

8. Parasitical. Roots filiform, creeping, strict, white. Stems simple, heaped, tufted, from one to two feet long, erect, filiform, leafy, compressed a little, smooth. Sheaths radical, withering, whence the stems appear to be jointed. Leaves alternate, approximating, sessile, sheathing, slightly streaked, smooth on both sides. Sheaths of the leaves compressed. Spike scarcely the length of the leaves; flowers sessile, alternate, imbricate, from six to ten, small and blood-red. Spathes sheathing, under the flowers, coloured. Corolla three-cornered, gibbous at the back; the three outer, and the two inner petals almost equal, oblong, concave, blunt, the two outer in front vaulted, compressed at the tip. Nectary of the same shape with the inner petals, erect, embracing the column at the base, having two dark-purple spots at the edge, concave, blunt at top, blood-red. Column shorter than the petals, gibbous at the back, with three teeth at the tip, bearing in a cavity four oblong pedicelled anthers, closed by a four-celled lid, hollowed in front for the stigma. Capsule oblong, three-valved, opening in the middle. Seeds extremely minute, dusty and bristly^k; as Jacquin says, irregularly shaped like saw-dust.

Native of thick mountain woods in Martinico, and other of the West-India islands; flowering in spring. Cultivated at Kew in 1794.

9. The sheaths of the leaves, the panicle and the petals are dotted, whence the name. Native of America.

10. This also is a native of America.

11. Native of the East-Indies^l.

12. This is an elegant plant, a foot and half high, parasitical on the trunks of vast trees, from which

^d Long's Jam. 3. 715.

^e Linn.

^f Linn.

^g Swartz. obs.

^h Jacquin.

ⁱ Swartz.

^k Ibid.

^l Linn.

it hangs down towards the ground. Roots thick, fibrous, numerous. Stem simple, smooth. Leaves two, obtuse, quite entire, shining, veinless, coriaceous, flat, alternate in two rows, half a foot long, erect like hare's ears, each arising from an oblong, thick, striated, spongy body, forming the base of the stem. Spathes smooth, ferruginous, numerous, compressed below the flowers, imbricate, alternate, distich, covering the spadix, loose and patulous in flowering time. Spike loose, composed of about ten handsome white flowers, four inches in diameter, all pointing one way. Native of Martinico^m.

Cultivated at Kew in 1794.

13. Roots round, thick, filiform, whitish. Stem from one to two feet high, simple, erect, round, leafy, smooth. Leaves sheathing, alternate, subdistich, from two to three inches long, oblong, entire, thickish, veinless, shining. Flowers terminating, two or three, sessile, large, whitish yellow. Spathes a few, ovate, compressed. Petals almost equal, lanceolate-linear, spreading, the two inner narrower and white. Tube of the nectary compressed, gibbous, shorter than the petals; lip trifid, the lateral segments entire, the middle longer, erect, subulate-linear. Column inclosed within the tube of the nectary, gibbous, having at the top four pedicelled, obovate, compressed anthers, under a four-celled cover. Capsule oblong, attenuated at the base, three-cornered, three-valved, opening in the middle. Seeds resembling saw-dustⁿ.

Native of the mountain woods in Martinico; and in Jamaica, but not common. It smells very sweet during the night.

14. Native of America. Cultivated at Kew in 1794.

15. Roots several, filiform, flexuose, creeping. Stem sheathed with the rudiments of leaves. Leaves alternate, fleshy, sharp, a finger's length. Native of Japan^o.

16. Roots thick, numerous, filiform, strict, whitish, knee-jointed. Stem one-leaved, thick, round, sheathed, a foot high, thickened towards the roots, knotted. Sheaths closed, alternate, closely surrounding the stem, keeled, streaked, membranaceous, whitish. Leaf in the middle of the stem sessile, sheathing, from round awl-shaped, deeply grooved, erect, spotted, thick, fleshy. Spadix from the sinus of the base of the leaf, and of the same length with it, erect, round. Spathes minute on the spadix, and below the flowers; which are from twelve to fifteen, large, whitish, yellow, sessile. Petals three outer, lanceolate-linear, long, spreading; two inner linear. Nectary somewhat funnel-shaped, embracing the column, erect, compressed, bellying at the base, keeled, dilated at top; lip ovate, with an awl-shaped, striated, veined, spreading, whitish point. Column minute, inclosed within the nectary, keeled, hollowed in front, bearing at top four, oblong, bipartite, pedicelled anthers, concealed by a four-celled cover. Germ very long, round, filiform. Stigma moistened in front under the cavity of the anthers. Capsules an inch long, oblong, pendulous, six-grooved, three-valved, many-seeded. Seeds dusty, bristly. Native of the West-Indies, near the coast; flowering in spring^p.

17. Native of the Philippine islands; on trees^q.

18. Root thick, fungous, crinite, knobbed, parasitical. Leaves several from the knob of the root, from two to three feet long, and two fingers broad, smooth, shining, brownish green, thick. Flowering-stems several, undivided, round, green, shining. Three of the petals are narrow, oblong, of a fine red colour within, with white edges, on the outside white and green, in streaks, with a tinge of red; nectary yellow, with red lines.

Native of Malabar, on different trees^r.

19. From a matted root this sends out several leaves three inches long, and not a quarter of an inch broad, almost triangular, and of a yellowish green colour. From the midst of these comes the

flowering-stalk. Each flower is made up of four little white petals, spotted with brown, and one large one with fewer spots, on which is a small yellow hood, and opposite to it one like it of a blue colour; on pedicels an inch long, round the top of the stalk. Native of Jamaica, on the ebonies^s.

20. Native of America.

21. Native of the East-Indies.

22. Three feet in height. Root white, woody, bent in, curled, fixing itself into the bark of trees by its capillary hairy fibres. Stem rising between two rows of leaves, simple, shining, smooth, marked with rings. The leaves which come out from the top of the stem, and when dry constitute the stem itself, are oblong-narrow, equally thick and broad on every side, folded together, smooth, shining, without any visible veins or nerves. Flowering-branches ten or twelve together, rising straight from among the leaves, green, rigid; accompanied at the base by abundance of very minute whitish buds, gradually enlarging, but not opening till they have acquired a considerable size. All the flowers opening together invert the stem, and resemble a fox's tail; they are on whitish peduncles, issuing from a small acute bracte, stiff, thick, oblong, irregular, whitish, spotted with red, blue and lurid colours.

Native of Malabar, where it flowers in april and october; the flowers continuing two months, and a branch set in water will flower for a month^t.

23. Roots thick, like packthread. Leaves like Crinum or Squills, fleshy, half a foot long. Stem two feet high, naked, surrounded by a few acute, very short scales. Flowers snow-white, like those of Orchis Sufannæ, the size of Narcissus flowers; the two side petals are orbiculate, the three others are ovate: cowl three-leaved, the two side ones oblong, the middle hastate, bifid, with two awl-shaped bristles. Observed in the East-Indies by Osbeck^u; on branches of trees, on the coast of Java, also by Rumphius. The flowers are large, and odoriferous; lying in a room they do not wither for several days, and fill it with a most agreeable smell. On the isle of Ternate none but princesses are allowed to wear this precious flower^v.

24. Roots filiform, strict, whitish. Leaves broad-lanceolate, acuminate, keeled at the base, compressed, growing on an oblong, fleshy, smooth, fibrous, succulent, compressed bulb, involved in membranaceous sheaths. Spathe two-leaved, one less than the other, acuminate, at the base of the scape among the leaves. Scape from the middle of the bulb, solitary, round, erect, with a few minute spatules. Flowers terminating, four or five, large, subsessile. Petals linear, acuminate, reflex, yellowish. Nectary, lip heart-shaped, blunt, concave, dark-blood-red, streaked with white at the base, yellow at the tip. Column three-cornered, spotted with red at the base, three-horned at the tip, bearing two pedicelled, bipartite anthers. Capsules oblong, acuminate, pendulous.

Native of the mountainous parts of Jamaica^w. This is one of the few species yet introduced; we are obliged to Mr. Alexander Anderson for it in 1786. It flowers here in january and february^x.

25. This is a native of America. Linneus sets it down as the growth of both Indies, supposing it to be the Angraecum terrestre primum of Rumphius, which Swartz assures us it is not, because it is drawn without leaf-bearing bulbs, and is said to grow on the ground. It is probably a species of Limodorum^y. Loureiro has described a plant cultivated in the gardens of China and Cochinchina, as the E. tuberosum of Linneus; but as he refers to Rumphius, and says that it is not parasitical on trees, but grows on the ground, it may also be a Limodorum, or at least is a different species from this.

26. Root fibrous. Plant little more than an inch

^m Jacquin.
^p Swartz.

ⁿ Swartz.
^q Aft. upf.

^o Thunberg.
^r Hort. malab.

^s Sloane.
^t Osbeck.

^u Hort. malab.
^v Swartz.
^w Swartz obs.

^x Linn. spec.
^y Hort. kew.

high. Leaves disposed like those of Iris, even, acute, all radical. Scapes between each of the leaves solitary, the length of the leaves, with three or four minute leaflets scattered over them. Flowers terminating one or two, from a three-valved glume: the three upper petals spreading, oblong, the uppermost very small; the two inner toothed: lip trifid, the side-lobes subcordate, the middle larger, bifid.—Or, according to Allamand, in mantissa—petals ovate-oblong, acute; upper lip of the nectary ampullaceous-tubular, emarginate, lower very large, sinuate, with four lobes on each side, opposite, equal. Capsule spherical, six-keeled.

Observed in Surinam by Dahlberg^b.

27. Root perennial, consisting of a few thick fleshy fibres. Leaves radical, several, equitant, erect, clothed with some brown permanent scales at the base, rigid, rather sharp-pointed, with a rough margin towards the top, channelled, nerved, smooth on both sides, when dry becoming longitudinally striated. Stalk growing on the outside of the leaves, and not quite so long, erect, simple, brown, bearing from four to six flowers, and furnished with three or four alternate, sheathing, acute, striated, brown scales, and compressed towards the top. Flowers alternate, sessile, a little drooping. Bractes solitary, resembling the scales on the stalk, but smaller. Petals obtuse, smooth, pale green marked with red longitudinal streaks; three external and spreading, two internal, approaching each other, and a little shorter. Lip of the nectary as long as the inner petals, blunted, keeled underneath at the base, erect and somewhat crisped in the margins, marked on the upper side with two tubercles, which meet together and cover a longitudinal furrow, in front it is of a broad lanceolate figure, obtuse, pale yellow elegantly speckled with purple. Column of the fructification separate from the nectary, and half the length of its lip, curved; hollowed beneath, and spotted with red, obtusely keeled and reddish on the back, slightly three-cleft at the tip. Cover roundish, swelling, yellow, fixed by its base to the column, loose above, hollowed behind. Anthers obscurely two-lobed, yellow, pellucid. Stigma depressed. Germ an inch long, roundish, incurved, striated, green. The flowers have a sweet lemon-like odour, pungent but not strong, most remarkable at night or on entering the hot-house in a morning. On account of this perfume, the plant is much cultivated in China^c.

Thunberg makes it a *Limodorum*, and Swartz thinks that it should rather be referred to that genus, as several other species may probably be. Thunberg however afterwards referred it to this genus.

Loureiro remarks, that the nectary is not turbinate in this and his *tuberosum*, and that there are several varieties, particularly with flowers of a pure white, much esteemed for its very sweet and delicate smell.

Native of China and Japan. Cultivated by the Marchioness of Rockingham^d, before 1792.

28. Flowers white. Common on walls and in hedges in Japan. Parasitical.—Chevalier Thunberg, in his travels through Japan, observed it at Misima, tied up in bundles, and hung out before a house. It can live several years without water or other nourishment, and yet grow and flower all the while^e.

29. Native of America. Swartz affirms, that the *E. ophioglossoides* of Jacquin is the same with his *trigoniflorum*. See n. 75. Dombey's specimens, brought from Peru, agree with Plumier's figure.

30. Roots numerous, filiform, rigid, whitish. Stems aggregate, often united at the base, filiform, a foot high, erect, sheathed, smooth. Leaf terminating, ovate-lanceolate, half the length of the plant, acuminate, entire, keeled, channelled at the base, compressed, smooth, thick, veined. Sheaths of the stem long, acuminate, streaked, withering.

Peduncles short, two-flowered. Common spathe ovate, acuminate, compressed, gaping, emitting peduncles that are bent down, with nodding flowers, of a pale green colour. Corollas small, acuminate, four-pétalled: the two outer petals, which are the upper and lower, opposite, lanceolate, acute, patulous; the two inner lateral, linear, shorter, erect. Nectary of the same shape with the inner petals, but less, erect, channelled, pale; lip obtuse, recurved. Column of the fructification round; at the top, in a hollow, two roundish anthers, covered with a two-celled lid. Capsules ovate, small, acuminate, six-grooved, three-valved.

Native of the high mountains of Jamaica, on the trunks of old trees^f; and in the thick woods of Martinico^g. Cultivated at Kew in 1794.

31. Native of America.

32. Found at the Cape of Good Hope by Thunberg, parasitical on the trunks of trees^h.

33. Stems several, a little divaricated, compressed, entirely clothed with leaves; which are alternate, sheathing, embracing, of a long oval form, obtuse, entire, somewhat reflexed at the tip and margin, obsolete nerved, coriaceous, smooth on both sides, dark green above, purple beneath. Flower-stalk erect, very long, simple, compressed, with many knotty joints, smooth, green, but entirely covered with brown membranaceous sheathing scales, which are alternate, sharpish, compressed, keeled and ribbed. Spike terminating, erect, forming a globose dense head of many flowers. Bractes solitary under each flower, lanceolate, concave, acute, purplish green, one third the length of the germ. Flowers pale greenish purple, with a faint herbaceous smell. Petals spreading, of equal length, the innermost narrowest, lower ones somewhat sickle-shaped, pointed upwards. Lip of the nectary a little longer than the petals, concave, keeled, slightly five-lobed; the lateral lobes largest and roundish, the odd one very small, shorter than the rest, and appearing like a little tubercle. Column of fructification bent down, affixed to the lip, and but half as long, triangular with the angles purple, terminated in front by two lateral yellow closed lips, at the top abruptly truncated. Cover of the anthers roundish, flattened, yellow, fixed by its base to the above-mentioned lips, loose in the upper part, closing the hollow truncated top of the column. Stamens placed in the cavity of the column behind the cover. Filaments very short; anthers in pairs, yellow, pellucid. Germ slender, rather cylindrical than angulated, a little twisted.

This approaches to *E. secundum*; from which it differs in having a column shorter than the petals, capitate and purplish or brownish-green flowers, instead of violet ones, leaning all one way. The structure of its flowers seems like those of *E. anceps* of Jacquin; but in the latter the spike is lateral, and its flower-stalk much shorter than in our plant.

Native of Jamaica. Cultivated by the Hon. Mrs. Barrington, at Mongewell in 1791ⁱ.

34. Root of a few thick fleshy long and nearly simple fibres, slightly downy. Bulbs above ground, numerous, ovate, but little compressed, smooth, green, somewhat glaucous, an inch long. Leaves sheathing, a little spreading, pointed, entire, nerved, very smooth, paler beneath; most numerous from the radical bulbs, clothed with oblong acute concave sheathing scales; fewer from the summits of the bulbs. Stalks thrice as high as the bulbs, erect, thickly covered at the base with smaller, concave, bluntish, reddish scales, imbricated in a two-fold order; in the upper part roundish, ending in a simple cluster of many flowers. Flowers on foot-stalks, spreading, white, without smell. Pedicels angular, shorter than the germ. Bractes solitary, linear-lanceolate, acute, membranaceous, nearly equal to the flowers, withering. Petals nearly equal, a little spreading, ovate, bluntish, concave, white

^b Linn. spec. & mant.

^c Smith spicil.

^d Ibid.

^e Swartz.

^f Jacquin.

^g Linn. suppl.

^h Thunb. jap. & trav.

ⁱ Smith spicil.

and semipellucid. Lip of the nectary of the same colour and nearly the same form with the petals, except its having on each side a slight angle, which seems bent upwards. Columns of the fructification very obtuse, pitcher-shaped, notched at the top, without any cover. Anthers on the summit two, sessile, small and yellowish. Stigma a transverse chink, not very evident, under the anthers. Germ oblong, with three membranous pointed wings, between each pair of which, on the sides of the germ, are two small intermediate wings.

Native of Jamaica. It flowered in the garden of the Hon. Mrs. Barrington in february 1793: also in Kew garden about 1791^k.

35. Root of numerous branched fleshy fibres, brown downy and divaricating. Bulbs several, above the surface, large, ovate, slightly compressed, smooth, green, with an unequal and somewhat furrowed surface. Leaves three or four from the top of each bulb, sheathing, a little spreading, pointed, entire, smooth, dark green, not very rigid, waved in the margin. Flower-stalks three inches high, nearly erect, bearing one flower, rarely two, round, green, smooth; clothed with four or more sheathing alternate scales, which are ovate, concave, green with a rusty-coloured powdery down. Flower from the uppermost scale, a little drooping, about the size of *Limodorum Tankervilleæ*, inodorous. Petals lanceolate, obtuse, somewhat succulent, slightly spreading, greenish, towards the tips of an olive brown; the two innermost rather the smallest; the two lowermost lengthened out at the base, and united into a short blunt pouch. Lip of the nectary arising from the back part of the inside of this pouch, unconnected with every thing above, somewhat shorter than the petals, covered on its upper side with an oblong yellowish deeply furrowed callosity, inversely heart-shaped in front; its margin is three-lobed, the lateral lobes small, acute, entire, erect, thin and transparent, terminating one very large, of a rusty brown, blunt, hollowed above, swelling below, pale and beautifully fringed all round the margin. Column of the fructification white, elongated at the base, connected by its back to the pouch of the corolla, and by its fore part at the bottom to the lip of the nectary; incurved and blunt at the top; behind obtusely keeled; flat and with two slight furrows before. Cover pointed, obscurely three-celled within. Stamens red, close together. Anthers two on each filament, obovate, yellow. Stigma large, very much excavated. Germ somewhat longer than the pouch of the flower, green, nearly cylindrical, with six furrows.

This is the most distinguished of the species hitherto introduced among us, not only on account of its size, but its singularity. Neither this nor the preceding occurred to Dr. Swartz, who investigated the island of Jamaica with no less ardour than accuracy. It is to be hoped therefore that more new species may hereafter be discovered there.

Native of Jamaica. It flowered in april 1791, in the collection of the Hon. Mrs. Barrington; and in Chelsea garden the year following^l.

36. to 84. All these species were observed by the indefatigable Swartz in the West India islands, chiefly in Jamaica. Most of them are new, but some had been found before by Professor Jacquin; and five by Sloane, Browne, &c.

36. This plant hangs down from the branches of trees and creeps up others to forty feet high. Stem jointed at the distance of about five inches, and at every joint fibres three or four inches long, catching hold by their broad viscid end of any part of a tree they come near; it is about three quarters of an inch in diameter, very smooth, round and deep green, solid, juicy, and sometimes branched: here and there, opposite to the tendril, comes out a thin membranaceous leaf, from a broad beginning ending in a point.

Native of Jamaica^m, and Hispaniolaⁿ.

^k Smith rar.

^l Ibid.

^m Sloane.

ⁿ Swartz.

37. Plant a foot and half high, leafy, parasitical. Roots fibrous. Branches compressed a little, smooth, ash-coloured. Leaves oblong, obtuse, coriaceous, rigid, veinless, entire, shining, sheathing at the base, dirty green, alternate, an inch and half long. Spathes cordate-ovate, acute, converging. Spikes loose, distich, an inch and half long, four-flowered or thereabouts. Flowers small, inelegant, greenish; petals somewhat rigid, equal in length, the three outer lanceolate, the two inner linear. Lower lip of the nectary oblong-cordate, acuminate, concave, rigid, the length of the petals, of which it occupies the place of the third interior one. Anthers roundish. Germ a little longer than the corolla. The rest as in *E. lineare*.

Native of Martinico^o, and Jamaica.

38. Native of Jamaica^p. Cultivated at Kew in 1794.

39. Swartz thinks it probable that his *umbellatum* may be the same with the *difforme* of Jacquin, which he thus describes.

Parasitical, smooth, seldom a foot in height. Roots round, fibrous, ash-coloured, numerous. Stems round, leafy, commonly horizontal or pendulous. Leaves oblong, coriaceous, pale green, sheathing, clothing the whole stem, alternate, an inch or an inch and half in length, mostly difform. Spadix very short, concealed within the sinus of the terminating leaf, five-flowered or thereabouts. Spathes very few. Flowers somewhat fetid, greenish white, rigid.

Common in the vast woods of Martinico^q, and in Jamaica.

40. Native of Jamaica. The aniceps of Jacquin is probably a variety of *E. secundum*, n. 7^r.

41. Parasitical, a foot high. Roots fibrous, ash-coloured, round, numerous. Stems simple, round, leafy, ending in a very loose, distich spike, four-flowered or thereabouts. Leaves coriaceous, rigid, shining. Spathes very large, coriaceous, rigid, almost the length of the flowers, which are inelegant, small, rigid and thick: petals spreading very much, the three outer ovate, the two inner lanceolate and a little shorter. Lower lip of the nectary cordate-roundish, blunt with a small point, flat, upright, the length of the petals, with a toothlet on each side at the base. Anthers simple. Germ oblong, incurved, three-cornered. The rest as in *E. lineare*.

Native of woods in Martinico^s, and Jamaica.

42. to 45. Natives of Jamaica^t. Of these and others we lament that we have not descriptions from the accurate hand of Swartz.

46. Roots fibrous, round, ash-coloured, numerous, parasitical. Stems caespitose, quite simple, two or three inches high, round, smooth, leafy, ending in a spadix bearing one flower, seldom two, very seldom three: whence there are very few spathes. Leaves awl-shaped, acute, smooth, shining, somewhat rigid, sessile, alternate, an inch long. Flowers small, scarcely coloured, erect, of the same structure with *E. lineare*, except that the germ is twice as long as the petals. Capsule six-grooved, the size of a small pea.

Native of the woods of Martinico^u, and Jamaica^v.

47, 48. Natives of Jamaica^w.

49. Parasitical and the largest of its sort. Roots large. Leaves many, long, narrow, smooth, dark green, somewhat like those of our common white Lily. Stalk round, tough, brown, crooked, six feet high, with joints at every eight or nine inches distance, where are branches standing straight out, with several flowers on peduncles an inch long. Petals ferruginous spotted^z.

Jacquin refers Sloane's plant here described to his *altissimum*. Swartz thinks that the *carthagenense* of Jacquin may possibly be the same with his *undulatum*. Jacquin thus describes it.

^o Jacquin.

^p Swartz.

^q Jacquin.

^r Swartz.

^s Jacquin.

^t Swartz.

^u Jacquin.

^v Swartz and Jacquin.

^w Swartz.

^z Sloane.

Parasitical, with the habit of *Aletris guineensis*. Roots round, whitish. Leaves radical, lanceolate-oblong, acute at both ends, quite entire, smooth, coriaceous, green on both sides and variegated with black dots, a foot long, two inches wide, few. Scape round, slender, brownish red, a foot and half high, racemed at the top. Peduncles an inch long, alternate, an inch and half distant from each other, the upper ones one-flowered, the lowest five-flowered. Spathes lanceolate, membranaceous, very slender and short at the joints, and subaxillary at the peduncles and flowers; these are handsome, with whitish petals spotted with ferruginous purple; upper lip of the nectary pale purple, lower of the same colour with the petals, with a violet-coloured disk. Anthers orange. Fruit an inch and half long^a.

Jacquin's plant is a native of Carthagenæ, in thick woods; that of Swartz, Sloane, and Browne, of Jamaica.

50. Swartz suspects that his variegatum may be the same with the tetrapetalum of Jacquin, who describes it thus.—It is an elegant parasitical plant. Roots round, ash-coloured, fibrous. Leaves radical, awl-shaped, acuminate, keeled, somewhat rigid, coriaceous, obtusely angular on the back, with acute-angular margins, pale green, sometimes rugged with rust-coloured dots, sometimes without and quite smooth; from an inch and half to six inches in length. Scape round, slender, from a foot to two feet in length. Spathes lanceolate, small, at the joints and peduncles. Peduncles about ten, one-flowered, forming a handsome raceme pointing one way. Flowers sweet-smelling, elegantly variegated with purple, violet, yellow and red. Petals four, obovate-acuminate, unequal, spreading much, the lower bifid at the tip, the other three repand, of which the uppermost is a little shorter than the rest. Disk of the nectary oblong with a cruciform bump. The lateral segments of the lower lip obovate and obtuse. The rest as in *E. carthagenense*.

Native of the woods in Jamaica^b, and Hispaniola^c.

51. Native of Jamaica and Hispaniola.

52. to 55. Natives of Jamaica.

56. Native of Hispaniola.

57. to 61. Natives of Jamaica^d. Of all these we have no description.

62. This is an elegant parasitical plant. Roots round, fibrous, ash-coloured, numerous. Leaves acute, ensiform-oblong, veinless, shining, quite entire, thickish, an inch wide, and half a foot long, keeled at the base, in other parts flat, each springing from a joint, or an ovate, compressed, smooth tuber, sometimes as big as a goose's egg, which is placed on the base of another root-leaf or two, like the others. Between this and the joint arises a solitary, round, smooth scape, of a rust-colour, slender, inclined, four feet high, racemed at top, clothed at the peduncles and joints with membranaceous, lanceolate, ash-coloured spathes. Peduncles two or three-flowered, alternate in two rows. Flowers without scent, yellow with brown spots, numerous. Petals oblong, distinct, acute at both ends, waved, nearly equal. The middle segment of the lower lip of the nectary is squarish, and the whole is yellow without spots. The rest as in *E. carthagenense*.

Native of the woods of Martinico^e. Cultivated at Kew in 1794.

Jacquin mentions another, which he names *E. violaceum*, from its beautiful violet-coloured flowers. He found it on a very tall arboreous *Cereus*, and had not an opportunity of examining it particularly; it appeared to him to have the habit of the species thus described.

63. Native of Jamaica. Introduced here in 1786, by Hinton East, Esq. It flowers in October^f.

64. This has many white thick fibres like those of Leeks, or the tendrils of Ivy, taking firm hold of the bark of trees, and matted together; these send

up one thick greenish roundish compressed bulbous or tuberous leaf, of an inch diameter, covered with some brown withered filaments. From the top of this come two smooth striated hollow hard pale green leaves; three inches long and one inch broad, between which springs out a naked brown jointed round smooth stalk, about a foot high, near the top of which stand several long reddish purple flowers, very beautiful.

Native of Jamaica, on the Ebonies and other trees in the Savanna woods, plentifully^g. Cultivated at Kew in 1794.

65. Native of Hispaniola.

66. to 69. Natives of Jamaica^h.

70. Roots small, branched, fibrous. Stems pendant, simple. Leaves alternate, numerous, small, reflex, quite entire, subtomentose, stem-clasping. From the axils of the leaves flowers solitary, on very short peduncles. Corolla of a coral red colour, the upper and the two lower petals of the same size and figure; the two lateral ones larger and wider; nectary small, three-lobed, the two upper lobes rounded and concave, the lower emarginate. Capsule red, ovate, warted.

Native of Guiana, on the trunks of old trees, which are sometimes quite covered with it.

71. to 74. Natives of Jamaica^k.

75. This little parasitical plant is only about four inches high. Roots fibrous, whitish, numerous. Leaf cauline, acute, quite entire, coriaceous, rigid, veinless, flat, shining, two or three inches long. From the sinus of this come out successively three or four spadixes, racemed, simple, slender, erect, a little longer than the leaf, having about ten flowers, and clothed at the base with a few spathes, and small floral ones. Flowers small, directed all to the same side, without scent, on short peduncles, of a dirty yellow colour.

Native of the mountain woods in Martinico^l, and Jamaica^m.—According to Swartz, Jacquin's ophioglossoides is not that of Linneus, but this species.

76. Native of Jamaica.

77. Native of Hispaniola.

78. to 83. Natives of Jamaica.

84. Native of Hispaniolaⁿ.

Of all these species we expect descriptions from the accurate hand of Dr. Swartz, the first discoverer of them.

85. Parasitical, a foot high. Roots fibrous, whitish, thick, round, long. Leaves radical, two, three, or four, lanceolate, acute, coriaceous, flat, stiffish, quite entire. Scape simple, compressed, erect, ten-flowered or thereabouts. Common peduncles few, lateral, few-flowered. Flowers small, sessile.

Native of Martinico.

86. Parasitical. Roots round, fibrous, numerous. Leaf round, acute, slightly grooved within, smooth, fleshy, at bottom a finger in thickness, in length from one to two feet, but sometimes four feet, ending at the base in a knot or roundish tubercle, permanent after the leaf is decayed. Scape round, two feet long or more. Spathe lanceolate. Peduncles many-flowered. The natives call it *Cebolletas* (Cibouls or little bulbs), and make use of the tubercles triturated with salt in violent contusions, fractures, &c. The whole plant is void of smell.

Native of Carthagenæ in woods, especially on the coast^o.

These two plants are not mentioned in the *Systema vegetabilium*, or in any other book that I have seen.

87. to 109. These twenty-three species are natives of the East Indies, where they were discovered by Koenig, and are described by him at great length, as may be seen in the sixth fasciculus of Retzius's observations. Most of the species are new ones, not mentioned by any other author. A few of them

^a Jacquin.

^b Ibid.

^c Swartz.

^d Ibid.

^e Jacquin.

^f Hort. kew.

^g Sloane.

^h Jacquin.

ⁱ Swartz.

^m Swartz.

^j Aublet.

ⁿ Ibid.

^k Swartz.

^o Jacquin.

however are probably described and figured by Rumphius. Neither Koenig nor Retzius have given any diagnoses or specific characters; instead of these I have substituted for the present the descriptions of the leaves.

87. Peduncles axillary, almost erect, sometimes pendulous, round, smooth, jointed, woody at the joints bracted undivided half way, a foot and half long, within the raceme angular. Pedicels spreading very much, scattered, bracted at the base, round, smooth, white, the length of the flowers. Bractes oblong, pressed close, acute, rust-coloured. Petals united at the base to the nectary, flat; two lateral, spreading very much, ovate, broad, acute, larger; three inferior obovate, the middle one largest; all snow-white with a large rose-coloured spot at the end. Nectary inflated, rounded, three-parted, ascending, horned in the upper part, recurved, much larger than the corolla: segments of the inferior or inflated apex lateral, obliquely ovate, toothed at the edge, larger, snow-white; the upper linear, narrow, two-toothed and incurved at the tip, coloured, rose-purple, somewhat more rigid; the lower divided horizontally to the middle: the lower part of the nectary in front is an erect truncated body, rounded on the outer side, concave on the inner, with a large hollow filled with a whitish honey juice; at the apex is a heart-shaped scale, concave, keeled, resembling the head of a fowl, below this are two large globular yellow anthers, adhering to the truncated body, so glutinous that they may be drawn out into threads, divided on the outer side by a gaping chink. Style none: the stigma two approximating scalelets, below the tip of the scale and covering the anthers, fastened to the truncated body of the nectary, silky-subtomentose, and very small. Silique club-shaped triangular, the angles acute, attenuated at the base, truncated at top, thick, crowned with the withering corolla, smooth and more than an inch in length.

88. Swartz has given the same name to an American species: see n. 50.

Roots of the former year, bulbs above ground, erect, oblong, narrow, compressed a little, clothed with four or more alternate membranaceous scales, an inch long, scarcely three lines broad, green, putting out below horizontal filiform flexuose whitish fibres. Root of the present year coming out laterally from the base of the former, scarcely bulbous, covered by three oblong acute sheaths, spreading, membranaceous and purple at top. Stem none. Leaves in threes, variegated with green and blood red, with the edges white and red. Scape erect, a palm high, solitary, (seldom two) angular, striated, smooth, coloured, terminated by an oblong raceme. Peduncles simple, subalternate, spreading very much, roundish, club-shaped, striated, coloured, scarcely the length of the flowers. Spathes or bractes solitary, fastened below the peduncles, pendulous, pressed to the scape, linear-acute, smooth, membranaceous, of a sort of rose colour, the length of the peduncles. Petals spreading very much, oblong, acute, the edges rolled back, membranaceous, rose-coloured, the two lateral inferior ones somewhat narrower, the two upper ones and the lowest equal. Nectary margined; margin flat, the upper broader, toothletted, divided at bottom, segments distant, lanceolate, acute, membranaceous, lemon-coloured. Inner part vaulted, covering the proper turbinated nectary or truncated body, over which is a heart-shaped, appressed, white scalelet, convex on the outside, and within having two cells inclosing the anthers, which are sessile, fastened to the truncated body, oblong, divided by a little groove, yellow. Silique club-shaped, compressed a little, angular with deeper grooves.

89. Roots capillaceous numerous flexuose whitish. Stems many crowded roundish flexuose jointed perennial scarcely a span high. Racemes terminating simple. Flowers remote. Sheaths two or more, oblong, membranaceous, white and rose-coloured mixed. Petals four; lowest navicular, large, de-

scending apex horned and a little blunt, ascending broad, three-parted, the middle segment lanceolate, narrower, the side ones broader; upper petal inserted in the horned apex, erect, a little incurved, club-shaped, flat, emarginate and a little crisped at the top, white, the length of the lower one; two petals within the segment of the lower petal at the base of the nectary, ascending a little, lanceolate, equal in length to the segments of the lower petal, whitish. Nectary a truncated body, semicylindric, short, having a large hollow in the fore part, rounded behind, and a rim running to the horn on each side; hollowed at top with an orbicular convex scalelet, divided by a longitudinal partition into two cells for the anthers, the whole snow-white. Filaments very short and slender. Anthers subglobular with a little groove, large.

90. Roots capillaceous, flexuose, white, parasitical. Stems several, round, naked a little way above the root, the rest covered with oblong, tubular, acute, striated, rigid, whitish scales. Leaves quite entire, rather fleshy, scarcely the size of *Hypericum* leaves; but narrower. Racemes small, axillary, peduncled, reflex, scattered, frequent towards the top, few next the root, shorter than the leaves. Peduncles axillary, simple, solitary, round, sheathed: sheaths oblong, acute, short. Spathe one-leafed, at the base of the germ, fastened to the peduncle, ovate, acute, recurved, pressed to the peduncle, membranaceous, smooth, scarcely the length of the germ. Upper petal of the corolla erect, ovate-lanceolate, acute, a little concave, whitish; second and third fastened to the side of the nectary, erect, lanceolate, a little less than the former; the fourth horned at the base in front, the horn round and inflated, ascending towards the superior petal and two-parted, the segments spreading in two rows, recurved at the tip, ovate, acute, shorter than the flower; the fifth fastened to the inside of the horn of the fourth, oblong-club-shaped, rising to an obtuse apex, a little recurved, with a very small toothlet in the middle, a little shorter than the segments of the fourth petal. Nectary a truncated erect body, a little compressed, terminated by double scalelets, which are erect, one at the back of the nectary, the other in the transverse partition, fastened above the truncated disk, cordate-acute. Filaments scarcely any. Anthers six, club-shaped, yellow, subpellucid, three in each cell. Silique club-shaped, angular, grooved, a little incurved, the size of a grain of Rice, or hardly less than a grain of Wheat. The whole plant is scarcely a foot high, the leaves are smooth, and the flowers are white.

91. Roots fibrous, filiform, hirsute, white, fixed in the ground. Scape erect, clothed with sheaths and leaves, round, grooved, acute, red, with recurved linear-acute smooth green long stipules scattered over it, a foot high or more. Sheaths ovate acute quite entire keeled nerved membranaceous, the lower ones broader, shorter, greenish with red nerves. Spike erect cylindrical, closely set with blood-red flowers, a palm and half in length, the thickness of the middle finger. Peduncles very short, single, ending in erect germs, a little recurved at the tip, club-shaped, striated, coloured, with keeled crisp and toothletted streaks. Spathe one-leafed, fastened to the scape below the peduncle, recurved and pressed close, linear acute, quite entire, smooth, narrow, twice as long as the flower, a little coloured. Petals irregular, the three lower spreading, curved towards the anterior ones, linear, acute, rolled back on the edges, smooth on both sides, a little broader than the intermediate ones; the two upper petals fastened to the germ, and with the former curved towards the anterior part, obliquely ovate, convex at the base, flat behind, spreading a little, a little shorter than the former. Nectary a truncated body at the base of the back, lobed; lobe ascending obcordate; from the sinus of the heart proceeds a horned body half surrounding the truncated body, double its length, fleshy and of the same colour. Proper nectary erect, cylindric somewhat compressed,

compressed, smooth, obliquely truncated: the disk or apex hollowed. Scalelet fastened to the anterior margin, which is singular; it is orbicular, smooth, whitish, membranaceous, concave within. The two anthers are obovate or club-shaped, yellow, subpellucid, connate at the base, very small and much resembling those of the *Contortæ*. Style none, except the nectary, at the back of which, a little below the disk, is an oblong labiate cleft, the lips membranaceous and white. Silique obovate, angular, rugged, larger than a grain of Barley, crowned by the permanent apex of the nectary.

92. This is supposed to be *Herba Supplex minima* of Rumphius. It grows on trees by capillaceous fibres, a little compressed. Stem none. Leaves from five to seven, the length of the little finger. Spikes terminating, naked at the base, filiform, longer than the leaves, scarlet. Scape below the flowers round smooth, with a few bractes, among the flowers marked with prominent streaks. Spathe solitary, fastened to the spadix below the germ, almost erect, lanceolate, acute, smooth, membranaceous, longer than the germ, a little coloured. Petals six, three outer spreading, linear-lanceolate, smooth, semipellucid, less coloured, two anterior and one posterior; two interior lying over the two anterior ones, a little broader, more concave and coloured; the sixth posterior erect, at the base broad and concave. Nectary truncated, half surrounding, ending above in an obcordate lobe. The truncated body is very short and small, covered by a white scalelet, containing two very minute glandular anthers. Stigma, a very small oval aperture at the back of the truncated body below the tip of the disk. Silique globular, crowned with the truncated body, having grooves with acute three-valved edges.

93. Parasitical, by means of filiform branched smooth green fibres. Stems simple pendulous jointed leafy flexuose sheathed thicker than the roots, two feet long or rather more and a little more slender at the base. Leaves scarcely a palm and half in length and an inch in breadth, bright green. Sheaths tubular smooth naked, quite entire at the mouth, the length of the interstices, scarcely an inch in length, coriaceous. Flowers above the leaves, usually solitary, but sometimes several, spreading, sessile, the size of those in *Orchis pyramidalis*. Spathes heart-shaped, small, somewhat fleshy, yellowish, caducous. Petals lanceolate, yellow with large darker spots; the two upper ones ascending, the middle one spreading from the lower petals, the two lateral ones larger, more reflexed towards the back, narrower, all concavo-convex. Nectary in the disk of the flower, two-parted; upper lip spreading, hastate, the upper lip recurved, and between the lower segments two glands connate above; below running to the other side, purple-rose-coloured, horned behind, the horn scarcely descending, conical, sharpish, white, half the length of the germ. Filament single, fastened within the apex of the lip, flattish, white, incumbent and equal to it in length. Anther, two globules divided by a groove; in the cavity of the truncated body, lemon-coloured. Style none. Stigma a cavity below the lip and disk of the truncated body. The decurrent margins within the hastate lip form an orifice in the horn, and are somewhat fleshy, rigid and coloured, usually rose-colour or purple. Silique linear, three-sided with the angles winged, incurved, ascending stiffly, longer than an inch. It should be remarked, that when the plant is pendulous, the parts above described are reversed.

94. Root capillaceous few white parasitical shoots in bundles pressed close to the bark, little branched, sometimes jointed, unequal, a span long, hoary, green. Racemes half an inch long, green rust colour. Spathes heart-shaped, solitary, alternate, sessile, acute, fleshy, small, permanent, from five to eight. Flowers alternate, spreading. Petals fastened to the nectary, erect, linear-lanceolate, acute, a little longer than the nectary, equal, yellow. Nectary truncated at the base, semicylindric, horned

on the upper side at the base: horn ascending, ovate, inflated, somewhat compressed, a little longer than the truncated body; in the disk a pedicelled, concave, two-celled, rose-coloured scalelet, membranaceous in front, acute, white, beaked, very small. Silique round, incurved, smooth, scarcely an inch long.

95. Roots filiform very long whitish green parasitical. Stem with the long roots commonly pendulous, roundish, sheathed with leaves, simple, short. Leaves scarcely a span in length. Spikes opposite to the leaves, peduncled, spreading, flat, ferrate, the length of the leaves, rather remote. Spathes bifarious, alternate, boat-shaped, compressed, acute, fleshy, rigid, permanent, forming a ferrate spike, one to each flower. Petals linear-acute, pendulous smooth, narrow, yellow. Helmet of the nectary scarlet, incumbent, inflated, with two lobes spreading a little, having an almost erect horn at the top, and below the horn on the inner surface, a tongue-shaped, retuse, small, ascending lobe, fastened to the disk: the truncated body semicylindric with a concave tip, white, membranaceous, oblong, obtuse, inclosed. Anthers solitary, oblong, obtuse, grooved, large, white.

96. Roots filiform, white, parasitical. Stems at the threads of the roots pendulous, round, sheathed with leaves, short. Leaves bright green. Spikes short, opposite to the leaves, spreading very much, peduncled, club-shaped. Peduncles roundish, smooth with a few coloured dots, woody, scarcely the length of the leaves: bractes solitary, pressed close, heart-shaped, smooth, rigid, towards the middle of it. Spathes several, alternate, somewhat spreading, heart-shaped, acute, compressed at the back, smooth, coriaceous, one to each flower. Corolla six-petalled, or more properly one-petalled; five segments spreading, linear-lanceolate, nearly equal, yellow, long; the sixth galeate, inflated, incumbent on the nectary, horned at the tip; horn erect, oblong, rounded, bearded, white, the rest orange-coloured. Nectary truncated, erect, concave, ovate at the tip, submembranaceous, white, covered with an oblong obtuse concave white membrane, containing a solitary yellowish anther. Style club-shaped, small, within the hollow of the nectary, in some specimens. Silique filiform, striated, with a groove on each side, smooth, longer than a palm, and one line in diameter.

97. Roots filiform smooth white parasitical. Stems simple erect round smooth sheathed short. Leaves a span long. Peduncles next the roots, alternate, spreading very much, round, smooth towards the middle, reddish, having a heart-shaped appressed solitary bracte, and being terminated by a round spike much shorter than the peduncle. Spathe one-leaved superior heart-shaped broad spreading at the tip, smoothish, fleshy, permanent. Petals five lanceolate, somewhat spreading, equal, snow-white; sixth galeate, opposite to the nectary at top, inflated at the back, lobed on both sides at the edge, lobes approximate somewhat erect at the tips; orange-colour, horned at the tip; horn erect, oblong, a little thicker at the tip and thence club-shaped, tomentose, yellow. Nectary in the disk of the flower surrounded by the lower petals, semicylindric, obtuse, smooth, snow-white with the edge of the blunt apex of a most elegant carmine colour: apex covered by a suborbiculate convex scalelet; this is membranaceous, growing close to the back of the margin of the nectary, white tinged a little with rose colour. Anthers two sessile on the truncated concave body, inclosed in the scalelet, yellow. Silique filiform smooth roundish, with a groove on each side, crowned with the truncated body which is sometimes incurved, narrower than the leaves.

98. Roots filiform, branched, smooth, green, parasitical. Peduncles several, round, woody, sheathed, jointed. Bractes double at the apex of the germ, subsessile, opposite, spreading very much, ovate-lanceolate, sharpish, quite entire, fleshy, smooth, a little shorter than the germ. Instead of a calyx there are

are short white tubular sheaths pressed to the tube. Corolla monopetalous irregular: tube erect capillaceous, with hairs scattered over it, snow-white, long: border double, lower four-parted; lower segment boat-shaped spreading larger; lower apex blunt four-parted; two lateral segments ascending from the tips of the larger border; acute, two within those tips towards the tube fastened to the truncated nectary, erect, lanceolate, acute, the length of the former: the other apex horn-shaped, ascending, a little inflated, round, much narrower than the other and longer. Anthers semiglobular, double, lemon-coloured, inclosed in the cells of the nectary. Silique linear-oblong, angular, striated, a little incurved, the length of the peduncle. Sometimes the lower border is five-parted to the nectary, and then the middle segment is broader, the lateral ones narrower.

99. Roots parasitical filiform round, clothed with scales, flexuose, from one bulb to another the thickness of a goose-quill, putting out bristle-shaped thickish fibres, especially below the bulbs, of a chestnut colour. Bulbs above the roots almost erect sessile obovate compressed wrinkled, terminated by leaves, scarcely the size of a hen's egg. Apex of the root club-shaped, jointed, terminated by sheaths and leaves alternate bifarious compressed. Scapes solitary from the base of the bulb, erect, with six or seven alternate ovate and oblong sheaths at the base closely imbricate in two rows: the lower ones short broader, the upper ones more diverging longer acute, round, with a chestnut-coloured nap. Bractes solitary or two alternate towards the middle of the scape; they are a foot long and not so thick as a goose-quill. Flowers racemed, distich, subalternate, peduncled. Peduncles spreading, round, covered with a chestnut nap, shorter than the spathe. Bractes pressed close, lanceolate, acute, concave, membranaceous, whiter than the scape, scarcely the length of the scapes. Spathe one-leaved below the peduncle fastened to the scape, pressed close to the germ, lanceolate-oblong, flat with the edges curved back, seven-nerved, subvillose keeled on the back, fleshy, red-rust-colour. Corolla irregular, consisting of doubled petals; the outer monopetalous, navicular, ascending; anterior apex rounded, undivided, posterior ascending, three-parted; the two lateral segments obliquely lanceolate, a little broader, decurrent towards the anterior tip, the middle one lanceolate, the outer surface of all with a chestnut-coloured nap, the inner smooth, with very few hairs scattered over them: petals interior three; the upper fastened by its anterior tip to the nectary, decumbent, with the other tip ascending within the outer segments, oblong, concavo-convex, before the tip a little narrowed, rounded at the tip, the whole white except at the end which is scarlet: the two other petals are fastened laterally to the back of the nectary, thence they are erect, lanceolate, smooth, white, the length of the outer segments but narrower. Nectary a truncated body, semicylindric at the base, the length of the flower, decurrent, thence ascending, only half the length of the petals; scalelet semiglobular, two-celled on the inferior surface, covered, concave. Anthers double glands, fastened to a filament on the edge of the back, within the cavity of the nectary, covered by the cells of the scalelet, yellow, ovate. Silique erect, a little incurved, club-shaped, round, alternately streaked with hairs and naked lines, crowned with the permanent corolla, liver-coloured.

100. Roots filiform slightly complicated, a little flexuose, smooth, whitish green, very long. Stem scarcely any. Leaves the length of the middle finger and narrower than the little finger. Scape from the axil of the sheath of the lower leaf laterally curved, spreading very much, smooth below the middle, closely surrounded at the base by ovate acute obsolete short sheaths, an inch long. Spike single, seldom three-parted or double at the base, longer than the peduncle; rachis subflexuose, round, smooth; each flower spreading, small, yellow. Spathe one-leaved, pressed close to the germ, ovate, acute,

concave, smooth, green, margined, half the length of the germ. Corolla six-petalled, fastened to the germ below the nectary: the two lateral ones are obliquely ovate, erect, smooth, yellow; three surrounding the back of the nectary, erect, of these the two more lateral ones are lanceolate, the third outer one is broader and ovate; all equal in height; the sixth anterior towards the nectary incumbent, ascending a little at top, rounded, the height of the former, sometimes with three toothlets, margined, convex, having a keel within running towards the horn: inferior apex descending, horned, rounded, shorter than the germ. Filament single fastened to the truncated body, flat, membranaceous, white, short. Anthers globular double pale, in the cavity of the nectary incumbent. Scalelet obcordate, divided by partitions, white, fastened to the back of the nectary, formed of a very tender membrane, covered. Nectary truncated, semicylindric, concave at the tip then decurrent, white. Stigma, a large rounded aperture below the tip of the truncated body. Silique oblong, angular.

101. Roots simple filiform slender flexuose scarious hoary-green, fastened to the bark of the Mangostan tree. Stems three or more, sometimes but seldom above a foot long. Spikes terminating solitary peduncled, cylindric, acute, resembling spikes of wolf's-claw Moss (*Lycopodium*) but less thick, two inches long. Peduncle sheathed at the base with double appressed leaflets, round, covered with heart-shaped scalelets ciliated at the edge, short. Flowers sessile closely approximating, covered with heart-shaped ciliate appressed membranaceous pale green caducous spathes. Corolla six-petalled, unequal, fastened to a coloured germ; the uppermost petal spreading very much, pressed close to the spike, ovate, sometimes obcordate, concave; the two upper lateral ones reflex towards the back of the upper one, ovate, smaller, the two lower lateral ones more spreading, incumbent on the lower, ovate, acute, very small, a little thicker and more coloured; the lower petal flat, heart-shaped, a little less than the uppermost: the whole corolla orange-coloured. Filaments none; the two anthers included in the cavity of a very small whitish truncated nectary, covered with an orbicular concave lid, divided by a membranaceous whitish partition; oblong, callous, more coloured than the corolla. Germ club-shaped, with very small streaks, of the same colour with the flower: style none: stigma over the truncated body, divided by a membranaceous partition into cells for the anthers. Nectary a little oblong cavity, callous at the edge, fastened to the upper petal, and of the same colour. Silique obovate. Observed by Koenig at Malacca, the fifth of september 1779, on the Tamarind.

102. Roots in bundles, filiform, flexuose, parasitical. Stems creeping, filiform, unequal, with a whitish bark. Leaves more than a palm in length, and two thirds of an inch in breadth. Bulbs sessile, incumbent, straightish, solitary, ovate, grooved, wrinkled, scarcely more than half an inch in length, yellowish green. Scapes solitary by the side of the bulbs, simple, erect, round, smooth, jointed, scaly, shorter than the leaves. Scales four or five sheathing, oblong acute, tubular at the base, a little inflated at top, membranaceous, pellucid, shorter than the interstices. Flowers at the top of the scape or peduncle, crowded. Spathe one-leaved, fastened to the scape below the germ, spreading, incurved, ascending at the tip, linear-acute, concave, quite entire, rounded at the back, smooth, very tender, membranaceous, white, permanent, much longer than the germ. Petals unequal; the two upper ones approximating, linear oblong, curved at the base and spreading, a little concave, ciliate at the edge, nerved, having very small hairs scattered over them, the tips very long, sometimes two inches, pendulous, very narrow, straw-coloured; the two side ones upright, oblong, obliquely sharpish, flat, membranaceous, concolor, small, scarcely longer than the truncated nectary; the fifth or lowest spreading, boat-shaped, ascending with a sharp apex, mem-

membranaceous, ciliate, concolor, more than three times the length of the side ones. Nectary, a truncated slipper-shaped body, containing the parts of fructification, growing on the disk of the flower. Ascending apex incurved, bluntish, callous, fleshy, yellowish, in the tip of which is a sort of anther on a very short white filament, recurved and incumbent on the nectary, hastate, acute with blunt edges, the length of the nectary, yellow, but seeming destitute of pollen. Truncated body semicylindric, erect, white-membranaceous on the upper edge, rounded on the back, truncated at the tip, three-toothed, the side toothlets prolonged, white. Scalelet subglobular, fixed to the back of the nectary at top, lying on the truncated body, membranaceous, white, opening a little on the lower side, having a small partition, and containing two small oblong smooth yellow anthers. Pistil none, but the truncated body. Stigma, an orbicular hole below the disk of the truncated body. Silique oblong angular. In the morning the flowers are spread out, and hence two petals are long straight and upright; in the afternoon they are pendulous.

103. Roots filiform flexuose simple parasitical. Stem none. Bulbs above the roots closely crowded, ovate, quadrangular, wrinkled, the size of sparrows' eggs. Leaves a palm long, and two thirds of an inch broad. Petioles semicylindric, channelled, a little twisted, short. Peduncle at the base of the bulb, pressed close by a sheath, and another sheath above the base, the rest naked, ending in an umbel in an erect flat semicircle, with from six to nine flowers in one row: pedicels erect but spreading towards the end, a little curved to one side, round, smooth, coloured. Bractes linear-oblong, concave, acute, membranaceous, whitish, each shorter than the pedicel to which it is affixed. Corolla four-petalled, unequal; the upper petal erect, linear-lanceolate, with two teeth at the tip, and a large ovate hole at the base, where it appears to be tubular on account of the edges being bent back; it is white with a purple base, and more than an inch long; the two side petals are erect, obliquely lanceolate, a little incurved at the tips, the edges yellow, recurved, and ciliate with golden hairs; they are longer than the nectary and of a blood red colour; the lower petal spreading, ovate, acute, inflated, striated, ciliate, membranaceous, scarcely so long as the side ones, of a yellowish red colour. Nectary, a truncated body, with the tip incurved, ascending, a little callous, coloured, slipper-shaped. Anther? sessile, hastate, acute, curved, incumbent, somewhat fleshy, blood-red with a yellow tip, barren. Truncated body concave in the disk, margined, three-toothed, the back semicylindric, smooth, concave. Scalelet semiglobular, divided, incumbent on the disk of the truncated body. Anther double, subglobular, yellow, small. Germ club-shaped, striated, smooth, red, small. Style none: stigma, a round hole on the inside of the truncated body below the disk.

104. Roots filiform, in bundles below the bulbs on the stems, parasitical, flexuose, smooth, woody, whitish green, shining. Stems subscandent, variously branched, compressed a little, smooth, jointed, sometimes sheathed, ferruginous-green, long. Bulbs at the base of the branches. Racemes terminating, simple, sometimes a foot and half long, but seldom. Peduncle erect, curved a little and flexuose, covered with sheaths. Pedicels sheathed at the base, solitary alternate, remote simple, round, more slender at the base, smooth, snow-white. Flowers nodding. Sheaths solitary, sessile, with scalelets between. Corolla boat-shaped, five-petalled, snow-white. Silique oblong with five unequal angles, smooth, the thickness of a finger, opening laterally, three-valved. It flowers in the morning, shutting after noon, during several days.

105. Roots fibrous flexuose parasitical. Stem none. Sheaths membranaceous, striated, margined, smooth, the breadth of the leaves, short. Spike axillary, simple, peduncled, bifarious, erect, longer than the leaves. Peduncle erect, smooth, compressed

a little, jointed in the middle, having a large oblong acute membranaceous caducous bracte; the upper one has two or three alternate smaller bractes. Flowers on very short alternate pedicels, having involucre at the base, which are lanceolate ovate acute solitary appressed membranaceous whitish much longer than the pedicels. Corolla six-petalled, three outer larger, all spreading a little, concave, membranaceous, whitish. Nectary a truncate body, very small, covered by an inflated semiglobular membrane. Anthers two twin fastened to a single filament. Silique ovate-oblong, obscurely angular, smooth. Seeds very numerous, white, thrown out to a considerable distance by very slender elastic threads or hairs.

Observed by Koenig in a wood by Tsing near Malacca on the upper boughs of very lofty trees.

106. Stems scandent, branched, round, filiform, scaly. Flowers among the scales, in pairs, seldom solitary, approximating to the stem, small. Instead of a calyx, an ovate, acute, keeled scalelet, fastened to the germ, inflated, membranaceous, white, short. Corolla six-petalled; three outer, almost erect, ovate at the base, with lengthened tips, slightly awned, equal, whitish, stiffish; two inner lateral, fastened to the side of the nectary, erect, ovate-oblong, quite entire, rounded at the tip, flat, membranaceous, white, subtransparent, much shorter than the outer ones; the sixth or third inner petal is fastened to the upper tip of the nectary, ascending, lanceolate, recurved, a little channelled, longer than the two other interior ones, callous, yellowish. Truncated body very minute, white, with a bell-shaped scalelet for a lid, fastened to the back of the nectary, membranaceous, white, containing a twin, globular, callous, yellow, elastic, small anther. Germ linear-oblong, shorter than the flower, involved in several oblong acute appressed membranaceous white scales shorter than the germ. Style none. Stigma a little hole below the disk of the truncated body. Silique parabolic obscurely three-sided smooth small. The lid of the nectary when ripe opens elastically.

107. Roots filiform flexuose white parasitical. Bulbs crowded ovate angular grooved pale green, terminated by two or seldom three leaves, the size of a lark's egg. Leaves dark green, scarcely a palm and half long and four lines wide. Scapes at the base of the bulbs, solitary, almost erect, thick at the base and as it were sheathed by the bulb, short, filiform, roundish, smooth, having two sometimes three joints, at which are short oval scarious membranaceous sheaths, scarcely longer than a foot, dark green, flexuose between the flowers, angular. Raceme simple subspiked. Flowers from eighteen to thirty pedicelled remote, the lower ones more so, alternate. Pedicels round smooth, a little coloured, scarcely longer than the germ. Bracte solitary, fastened to the pedicel at the base, pressed close, heart-shaped acute membranaceous white small; besides this there is no calyx or spathe. Petals, the four outer spreading very much, the lower and upper linear acute, a little incurved at the tip, concave, the side ones broader, rounded at the tips, concave, more coloured purple, all equal in length, somewhat fleshy, purple at the tips the rest white. Truncated body scarcely any, in its place an erect fleshy body, erect, compressed, acute, incurved at the tip, rigid, white, having a groove and hole in front, scarcely shorter than the segments of the apex. Filament none. Anther covered at first, then bursting elastically from its membrane. Style none. Stigma a little cleft with a hole within the horn. Silique obovate, obscurely three-sided, with three grooves, smoothish, less than an inch in length.

108. Roots creeping in the ground. Stems simple erect round sheathed compressed a little smooth jointed, the interstices shorter than half the length of the leaf, from three to four feet long, and half the size of a goose-quill. Sheaths at the joints closely involving the stem, membranaceous, striated, two-keeled, blunt at the mouth, having one toothlet opposite to the leaf, a little shorter than the internodes:

internodes: sheaths radical and below the middle of the stem semiovate at the mouth, keeled on the back. Flowers terminating, on two or three alternate compressed spathes, toothletted in two rows on the edge, flexuose naked. Calyx none but the toothlets. Corolla six-petalled; five outer lanceolate acute quite entire erect equal in length; of these three are less white on the outside, and two fastened below the base of the nectary, more white, with a semipellucid nerve, more slender but hardly less; the sixth inner petal opposite to the nectary, or the border of the nectary, broad, trifid, inflated at the base, fleshy, the middle segment wrinkled fleshy yellow; the two lateral segments erect semi-ovate membranaceous, coloured, with close purple streaks. Nectary spreading, boat-shaped, oblong, margined, retuse, keeled, rigid, snow-white, about half the length of the outer petals. Filaments scarcely any. Anthers double, distinct, ovate, inflated, covered with a lid or heart-shaped white membrane, rather large, white, not callous, another membrane is incumbent on the anthers, which is bell-shaped emarginate divided into two cells. Germ cylindric, less than half the length of the flower: style within the nectary: stigma, a large triangular hole below the anthers, covered by the above-mentioned membranaceous lid. The flowers are larger than those of white *Narcissus*.

In the swampy parts of thick woods near Malacca. From the name we are to presume that this may not be specifically distinct from n. 89.

109. This climbs variously on trees. Leaves from bulbs, ovate-oblong acute flat fleshy. Scapes at the base of the bulbs, solitary or sometimes in pairs, with ovate inflated naked membranaceous sheaths at the base, covered with a snow-white nap, seldom a foot high, commonly shorter. Flowers subspiked solitary alternate somewhat remote, sessile on the germ, spathaceous, boat-shaped. Spathes ovate-oblong acute, prolonged at the tips to the length of the flower, quite entire nerved, having white hairs on the outer surface, naked on the inner, membranaceous. Calyx none. Corolla six-petalled; the three outer larger connate below the nectary above the germ, lanceolate acute quite entire, having a snow-white lanugo on the outside, within naked, yellowish, nerved; two other petals by the side of the nectary, fastened towards the truncated end, erect, lanceolate, acute, smooth on both sides, yellow, smaller; the sixth petal fastened above the base of the nectary and incumbent on it; doubly cordate; the segment of the base cordate, quite entire, concave, with a callous-fleshy disk, and a few brown-blood-red dots and streaks, a little larger in front, smooth; the outer segment from the bottom of the former, obcordate, acute, sublobed with a repand edge, concave, with a callous-fleshy disk, and difform whitish glands towards the tip; the rest deeper coloured, brown-blood-red. Nectary prostrate, fastened to the larger borders, linear, ascending, smooth, white, callous; at the top a truncated body. Filaments eight very short and slender, connate. Anthers eight likewise connate, obovate, flat, large and distinct, yellow, callous^p.

This having the name of *Flos aeris* with a note of interrogation, is suspected to be the same with n. 2.

The above descriptions, though very long, are considerably shortened, by omitting superfluities, by abridging what is prolix, and entirely leaving out some passages which are very obscure and even scarcely intelligible.

110 to 119 are natives of the newly discovered islands in the South Seas: 110 of New Caledonia; 111, 112, 113, 114, 116, 117, 118, 119 of the Society Islands; and 115 of New Zealand. They are all supposed to be new, except n. 118, which is figured in *Hortus Malabaricus*. Forster, in his appendix to his *Florula Australis*, mentions another species to be found in the Society Isles, to which he gives the name of *distichum*, n. 546.—and a second, to which he does not give any trivial name.—We

^p Retzius.

have to lament that we have hitherto no descriptions of these species.

Gærtner (fruct. 1. 47.) has a species, which he names *E. terrestre*. He thinks it may be *Angræcum terrestre primum*, Rumph. amb. 6. 112. t. 52. f. 1? which Linneus refers to *E. tuberosum*.

120. Leaves subradical, alternate, from a grooved multangular sheath; they are ovate-oblong, acute, waved, concave, grooved, striated, entire, smooth, erect, a hand in length and two inches in breadth, three, four, or five. Scape surrounded with leaves at the base, sharp-angled, smooth, erect, longer than the leaves. Flowers at the top of the scape in spikes, alternate, drooping, purple. Spike sharp-angled, erect, smooth, about a span long. A very short, ovate, purple bracte under each flower. Upper petal of the corolla ovate, reflex in the middle, grooved, emarginate, forming a helmet twice as broad as the others, having two calluses at the base between the petal and the style; the two lower petals lateral, bent down at the base, and then bent back, linear, like the leaflets of the calyx, and of the same length. Capsule cylindric-filiform, twisted, erect except at the tip, smooth, purple.

Native of Japan between Osacca and Jedo: flowering in may and june.

121. Leaves radical, four or five, sheathing, entire, smooth, unequal, an inch wide, a span long. Scape purple, the length of the leaves. Flowers on the top of the scape, in racemes, several, drooping. Bractes like the leaves, gradually diminishing. The two upper petals equal, ovate, the length of the calyx, yellow with a purple line, concave: lower petal or lip trifid, lateral segments rounded, shorter, white with red streaks, middle segment longer, concave, emarginate, bent in, white with a purple base, with two oblong purple calluses. Capsule cylindric-club-shaped, a little twisted, striated, purplish-green, smooth, drooping.

Native of Japan, flowering in june.

Though this be *Limodorum striatum* of the Flora Japonica, yet it is distinct from the plant of the same name in Kæmpf. ic. fel. t. 2.

Roots simple or branched, thick, smooth; long contorted fibres issuing from the lower naked part of the stem and from among the lower leaves, adhering firmly to the bark of the tree. Stem perennial, simple, one or two feet long, as thick as the little finger, crooked, the upper part covered with leaves, the lower naked, withering away at the lower extremity. Leaves approximate, imbricate, alternate, facing two ways, linear, channelled, fleshy, smooth, very firm, having two or three teeth at the end, from six to nine inches long, and about one broad. Raceme axillary, naked, length of the leaves, the flower-bearing part flexuose. Flowers from five to ten, remote, facing two ways, beautifully waved and striated, with various shades of a greenish yellow. Petals oval, spreading, equal, scalloped. Nectary the length of the petals: about the middle its sides approach, forming a tube; the apex is somewhat pointed.—This is a very beautiful parasite, found on trees among the Circar mountains; it flowers during the wet season.

122. Leaves remote alternate, facing two ways, linear, channelled, smooth, very firm, end-bitten, jointed just above their sheath-like base, about six inches long, and one inch broad. Spike before the leaf, or leaf-opposed, short, straight, thick, many-flowered. Bractes small, triangular, one-flowered. Flowers surround every part of the spike, small, variegated with red and yellow.—This grows in similar places.

123. The root consists of many fleshy fibres, like the two last, but issuing from one head. Stem none. Leaves radical three to five, alternate, facing two ways, from one and a half to three feet long, and about an inch and half broad. Scape radical, about two feet long, three or four inches at bottom involved in chaffy sheaths, the rest, forming the raceme, pendulous, many-flowered. Bractes minute, one to each flower. Petals lanceolate, spreading, equal,

equal, striated with rose-colour and yellow. Nectary red, the lower lip three-parted.

Native of the same places; and differing but little from the aloifolium of Linneus^a.]

PROPAGATION AND CULTURE.

Mr. Miller says there are near thirty species of this genus, but as the plants cannot, by any art yet known, be cultivated in the ground, it would be to little purpose to enumerate them, though could the plants be brought to thrive, many of them produce very fine flowers of uncommon forms. He adds, that he had three species sent him from America, which he planted with care in pots, and placed them in a stove, where they showed their flowers, but the plants soon after perished.

[Since Mr. Miller's time numerous species of this fine and very singular genus have been introduced into our gardens, and some of them cultivated with success by the superior skill of modern practice, which despairs not of rearing and preserving any plants where expense is not regarded. It requires however great skill and attention to overcome the united difficulties which attend the cultivation of plants which are at the same time of the Orchis tribe and parasitical.

Dr. Smith says, we have scarcely seen any one species of this genus, except in a dry state, before the year 1787, when *E. cochleatum* flowered for the first time in the stove, at Kew; nor was it till October 1788, that *E. fragrans* of Swartz exhibited its fragrant and elegant bloom in the same rich collection. At present several species are to be seen flowering in spring or autumn^c. The following were in a thriving state in the royal garden at Kew in 1794. *Epidendrum* Vanilla, coccineum, secundum, lineare, ciliare, cucullatum, ensifolium, ophioglossoides, ruscifolium, fuscum, tripterum, Barringtoniæ, nutans, sessile, altissimum, sanguineum, glaucum.

They are all cultivated in the stove, with very great heat; being mostly parasitical, they flourish best with fragments of half-rotten bark at their roots^d. They may be increased by parting their roots, or what are commonly called offsets, of which they generally have plenty.

EPIDENDRUM. See *Lycopodon*.]

EPIGÆA. (*Ἐπιγαία*, lying or creeping on the ground.)

Lin. gen. n. 550. Reich. 594. Schreb. n. 748.

Juss. 161. Memecylum. Mitch. 13.

Class. 10. 1. Decandria Monogynia.

Nat. order of Bicornes.—Ericæ. Juss.

GENERIC CHARACTER.

CAL. Perianth double, approximated, permanent.

P. exterior three-leaved: leaflets ovate-lanceolate, acuminate: the exterior large.

P. interior five-parted, upright, a little longer than the exterior: leaflets lanceolate, acuminate.

COR. one-petalled, salver-form. Tube cylindric, as long as the calyx or longer, hirsute within. Border spreading, five-parted: lobes ovate-oblong.

STAM. Filaments ten, filiform, length of the tube, affixed to the base of the corolla. Anthers oblong, sharp.

PIST. Germ globose, villose. Style filiform, length of the stamens. Stigma obtuse, subquincifid.

PER. Capsule subglobose, depressed, five-cornered, five-celled, five-valved.

SEEDS very many, roundish. Receptacle large, five-parted.

ESSENTIAL CHARACTER.

Cal. outer three-leaved; *inner* five-parted. *Cor.* salver-form. *Caps.* five-celled.

SPECIES.

1. *Epigæa repens.* Creeping *Epigæa*, or trailing *Arbutus*.

Lin. spec. 565. Reich. 2. 296. amæn. 3. 17. Gron. virg. 49. (Arbutus) Pluk. alm. t. 107. f. 1.

Raii suppl. 596.

Leaves cordate-ovate entire flat sharp, corollas cylindric.

^a Roxburgh.

^b Smith ic. rar.

^c Ibid,

2. *Epigæa cordifolia.* Heart-leaved *Epigæa*.

Swartz prodr. 73.

Leaves heart-shaped roundish serrate convex hispid rigid, corollas ovate.

DESCRIPTIONS, &c.

1. It is a low plant, with a trailing shrubby stalk, which puts out roots at the joints; and when in a proper soil and situation, multiplies very fast. The stalks are garnished with oblong rough leaves which are waved on their edges. The flowers are produced at the end of these branches in loose bunches; they are white, and divided at the top into five acute segments, which spread open in form of a star. It flowers in July, but does not produce fruit in England.

[Native of Virginia and Canada.

It seems to have been first introduced by Mr. Peter Collinson in 1736^e.

2. Native of Guadaloupe^b.]

PROPAGATION AND CULTURE.

1. This plant is easily propagated by its trailing stalks, which put out roots at the joints, may be cut off from the old plant, and placed in a shady situation and a moist soil: the best time for this is in autumn, that the plants may be well rooted before the spring. If the winter should prove very severe, it will be proper to lay a few dried leaves, or some such light covering over them, which will prevent their being injured by frost; and after they are well rooted, they will require no farther care but to keep them clean from weeds.

[*EPIGEIOS.* See *Arundo*.

[*EPIGLOTTIS.* See *Astragalus*.]

EPILOBIUM. (*ἐπι λοβου ιον*, supra siliquam viola; a violet upon a pod; a rare instance of the name expressing an essential character of the plant.)

[*Lin. gen. 471. Reich. 507. Schreb. n. 639.*

Gærtn. t. 31. Juss. 319. Chamænerion. Tourn.

157.

Class. 8. 1. Octandria Monogynia.

Nat. order of Calycanthemæ.—Onagræ. Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, four-parted superior; divisions oblong, acuminate, coloured, deciduous.

COR. Petals four, roundish, outwardly wider, emarginate, expanding, inserted into the divisions of the calyx.

STAM. Filaments eight, subulate: the alternate ones shorter. Anthers oval, compressed, obtuse.

PIST. Germ cylindric, extremely long, inferior. Style filiform. Stigma four-cleft, thick, obtuse, rolled back.

PER. Capsule extremely long, cylindric, streaked, four-celled, four-valved.

SEEDS numerous, oblong, crowned with down. Receptacle extremely long, four-cornered, free, flexible, coloured.

Obs. In some the stamens and pistil are upright, in others bent downwards to the lower side.

ESSENTIAL CHARACTER.

Cal. four-cleft. *Pet.* four. *Caps.* oblong, inferior. *Seeds* downy.

SPECIES.

* *Stamens bent down.*

1. *Epilobium angustifolium.* Narrow-leaved or Rosebay Willow-herb.

Lin. spec. 493. Reich. 2. 151. fl. lapp. 146. succ.

n. 327. hort. cliff. 154. Ait. hort. kew 2. 5.

Huds. angl. 161. With. 387. Curtis lond. 2. 24.

Lightf. scot. 197. Hall. helv. n. 1000. Pollich

pal. n. 369. Gunn. norv. n. 57. Gmel. sib. 3.

164. Krock. fles. n. 583. Fl. dan. t. 289.

E. Gesneri. Allion. pedem. n. 1015. Villars dauph. 3. 507.

Chamænerion Gesneri. De Bry floril. t. 42.—*angustifolium.* Scop. carn. n. 455.

C. Ger. emac. 477. 7, 8. Pet. brit. 52. 10.—flore delphinii. Park. parad. 267. 6.

Lysimachia Chamænerion dicta latifolia & angustifolia. Baub. pin. 245. Mor. hist. f. 3. t. 11. f. 1, 2.

^e Hort. kew.

^b Swartz.

- L. speciosa*, quibusdam *Onagra* dicta, filiquosa. *Baub. hist.* 2. 906. f. 907. 1. *Raii hist.* 860. 1, 2. *syn.* 310. *Leaves scattered linear-lanceolate quite entire veined, flowers unequal.*
- [2. *Epilobium angustissimum*. *Linear-leaved W. H. Weber dec.* 3. *Ait. hort. kew.* 2. 5. *Hall. belv.* n. 1001. *De Sauss. voy.* 2. 17. *Ger. prov.* 457. n. 2.
- E. angustifolium* γ. *Lin. spec.* 494.
- E. Dodonæi*. *Allion. pedem.* n. 1016. *Villars dauph.* 3. 507.
- Lyfimachia Chamænerion* dicta alpina. *Baub. pin.* 245. *prodr.* 116. *Park. theat.* 547. 2. *Raii hist.* 860.
- Pseudolyfimachium purpureum minus*. *Dod. pempt.* 85. *Leaves scattered linear obscurely toothletted veinless; petals equal quite entire.*
3. *Epilobium latifolium*. *Broad-leaved Willow-herb.* *Lin. spec.* 494. *Reich.* 2. 151. *Gmel. fib.* 3. 164. n. 34. *Fl. dan. t.* 565. *Krock. files.* n. 584. *Leaves alternate lanceolate-ovate, flowers unequal.*
- ** *Stamens upright regular, petals bifid.*
4. *Epilobium hirsutum*. *Large-flowered Willow-herb.* *Lin. spec.* 494. *Reich.* 2. 152. *hort. cliff.* 145. *fl. suec. n.* 328. *Ait. hort. kew.* 2. 5. *Curtis lond.* 2. 21. *With.* 388. *Relb. cant. n.* 292. *Lightf. scot.* 197. *Hall. belv. n.* 995. *Neck. gallob.* 180. *Pollich pal. n.* 370. *Villars dauph.* 3. 508. *Krock. files.* n. 585. *Fl. dan. t.* 326.
- E. ramosum*. *Huds. angl.* 162.
- E. grandiflorum*. *Allion. pedem.* 1018.
- Chamænerion hirsutum*. *Scop. carn. n.* 452.
- Lyfimachia filiquosa*. *Ger.* 386. 3. *emac.* 476. 6.—*hirsuta* majore flore purpureo. *Baub. hist.* 2. 905. 3. *Raii hist.* 861.—*hirs.* magno fl. *Baub. pin.* 245. *Raii syn.* 311. *Mor. hist. f.* 3. t. 11. f. 3. *Pet. brit.* 52. 11.
- L. purpurea*. *Fuchs. hist.* 491. *Leaves ovate-lanceolate half-stem-clasping hirsute, stem branching very much, root creeping.*
- [5. *Epilobium villosum*. *Hoary Willow-herb.* *Curtis lond.* 2. 22. *With.* 389. *Ait. hort. kew.* 2. 5. *Krock. files.* n. 586. *Relb. cant. n.* 291. *Fl. dan. t.* 347.
- E. hirsutum* β. *Lin. spec.* 494.
- E. hirsutum*. *Huds. angl.* 161. *Allion. pedem.* n. 1017.
- Lyfimachia filiquosa hirsuta parvo flore*. *Baub. pin.* 245. *prodr.* 116. *Raii hist.* 861. *syn.* 311. *Mor. hist. f.* 3. t. 11. f. 4. *Pet. brit.* 52. 12.—*fl. minore*. *Baub. hist.* 2. 906.—*sylvatica*. *Ger.* 387. *emac.* 479. 12.—*filiquosa sylvestris hirsuta*. *Park. theat.* 549. *Leaves oblong-lanceolate toothed pubescent, stem columnar villose.*
6. *Epilobium montanum*. *Mountain or wood Willow-herb.* *Lin. spec.* 494. *Reich.* 2. 152. *fl. lapp.* 147. *suec. n.* 329. *hort. cliff.* 145. *Huds. angl.* 162. *With.* 390. *Curt. lond.* 3. 24. *Relb. cant. n.* 293. *Lightf. scot.* 198. *Hall. belv. n.* 996. *Pollich pal. n.* 371. *Gunn. norv. n.* 56. *Gmel. fib.* 3. 165. *Krock. files.* n. 587. *Villars dauph.* 3. 509. *Gartn. fruct.* 157.
- Chamænerion montanum*. *Scop. carn. n.* 453.
- Lyfimachia filiquosa glabra major*. *Baub. pin.* 245. *Mor. t.* 11. f. 5, 6.—*filiqu. major*. *Park. theat.* 548. 3. *Raii hist.* 861.—*campestris*. *Ger.* 387. *emac.* 479. 11. *Raii syn.* 311. *Petiv. brit.* 53. 1.
- Pseudolyfimachium purpureum primum*. *Dod. pempt.* 85. *Leaves opposite ovate toothed.*
7. *Epilobium tetragonum*. *Square-stalked Willow-b.* *Lin. spec.* 494. *synt.* 359. *Reich.* 2. 153. *Huds. angl.* 162. *With.* 390. *Curtis lond.* 2. 23. *Relb. cant. n.* 294. *Lightf. scot.* 198. *Hall. belv. n.* 997. *Pollich pal. n.* 372. *Villars dauph.* 3. 509. *Krock. files.* n. 590. *Lour. cochinch.* 225.
- Chamænerion tetragonum*. *Scop. carn. n.* 454.
- Lyfimachia filiquosa glabra minor*. *Baub. pin.* 245. *Raii hist.* 861. *syn.* 311. 5. *Ger.* 387. *emac.* 479. *Leaves lanceolate toothletted, the bottom ones opposite; stem four-cornered.*
8. *Epilobium palustre*. *Marsh Willow-herb.* *Lin. spec.* 495. *Reich.* 2. 153. *fl. suec. n.* 330. *lapp.* 149. *Huds. angl.* 163. *With.* 391. *Relb. cant. n.* 295. *Lightf. scot.* 199. *Hall. belv. n.* 998. *Pollich pal. n.* 373. *Leers herbarn. n.* 288. *Krock. files.* n. 591. *Fl. dan. t.* 347? *Villars dauph.* 3. 510.
- Chamænerion palustre*. *Scop. carn. n.* 456?
- Lyfimachia filiquosa glabra angustifolia*. *Baub. pin.* 245. *Ger.* 386. 4. *emac.* 479. *Raii hist.* 862. 8. *syn.* 311. 6. *Leaves opposite lanceolate quite entire, petals emarginate, stem erect.*
9. *Epilobium alpinum*. *Alpine Willow-herb.* *Lin. spec.* 495. *Reich.* 2. 153. *Fl. lapp.* 150. *suec. n.* 331. *Huds. angl.* 163. *With.* 391. *Lightf. scot.* 199. t. 10. f. 1. *Hall. belv. n.* 999. *Krock. files.* n. 592. *Fl. dan. t.* 322. *Villars dauph.* 3. 510.
- Chamænerion alpinum, alpinæ fol.* *Scheuch. alp.* 132. 332.
- Lyfimachia filiquosa nana, prunellæ fol.* *Bocc. mus.* 2. 161. t. 108?—*glabra minor latifolia*. *Raii syn.* 311. 7. *hist.* 862. 9. *Leaves opposite ovate-lanceolate quite entire, siliques sessile, stem creeping.*
10. *Epilobium fruticosum*. *Lour. cochinch.* 226. *Stem shrubby very much branched, leaves quite entire alternate hirsute*
11. *Epilobium glabellum*. *Forst. flor. austral. n.* 160. *Leaves oblong toothed obtuse, the bottom ones opposite, stem roundish erect.*
12. *Epilobium rotundifolium*. *Forst. flor. austral. n.* 161. *Leaves opposite roundish toothletted.*
13. *Epilobium parviflorum*. *Schreb. lips.* 147. *Retz. obs.* 1. 16. n. 42. *Leaves opposite lanceolate serrate sessile, both they and the stem villose.*
14. *Epilobium alpinefolium*. *Villars dauph.* 3. 511.
- Lyfimachia filiquosa glabra*. *Raii hist.* 862. *Stem creeping, leaves ovate acute toothed, siliques the length of the stem.*

DESCRIPTIONS, &c.

These plants are hardy perennials, not void of beauty; they are however commonly considered only as weeds, and accordingly are seldom cultivated in gardens, except the first.

In the three first species the leaves are scattered or alternate; in the rest the lower leaves are opposite, but the upper alternate: the specific character therefore of opposite leaves is insufficient.

1. *Root* creeping. *Stem* upright, from three to six feet high, branched at top, round, and pubescent; branches alternate. *Leaves* alternate, running slightly down the stem, smooth, the edge minutely and rarely indented, the midrib whitish: the lateral nerves are nearly at right angles with this: and the leaves at their first appearance are rolled in at the edge. *Flowers* purple, showy, growing in a kind of long spike; on purple peduncles, the length of the germ; bending down before the flowers open, but afterwards erect; seldom more than four or five blown together on the same spike: the two lowermost petals somewhat remote from each other: filaments nearly of an equal length, purplish, at first bending down, finally becoming nearly upright, shorter than the pistil; anthers red, having two cavities; pollen green: germ slightly quadrangular, crowned by a gland; style white villose towards the bottom: stigma large, the four segments villose: capsule somewhat incurvated; seeds affixed to a very long, loose, flexible receptacle^a.

^a Curtis, Linn. Pollich,

There is a variety of this with white flowers.

From the similitude of the leaves to those of Willow, this plant obtained the name of *Willow-herb* or *French-Willow*. It was formerly much planted in gardens; but as it overruns all the neighbouring plants by means of its creeping roots, it has generally been cast out: however in low moist places, or in great shade, this plant will make a good appearance when it is in flower, which will be near a month, if the season be not very hot.

[It is native of most parts of Europe from Lapland to Italy. In Britain it is not common; on Maize-hill beyond Greenwich, and other places near London, it has probably got out of gardens; but in other places it is undoubtedly wild, as near Alton in Hampshire; in Charlton forest, and several other woods in Suffex, where Mr. Miller found it in great plenty, far from any habitations; about Berkhamstead in Hertfordshire; in several parts of Yorkshire; and many places in Scotland.

Gerarde (p. 388.) informs us, that he had plants of this species from Yorkshire, and that they grew in his garden "very goodly to behold for the decking up of houses and gardens."—His description is right, but the figure is of another species.

The young shoots are said to be eatable, although an infusion of the plant stupifies: the pith, when dried, is boiled, and becoming sweet, is by a proper process made into ale, and this into vinegar by the Kamtschatdales; it is also added to the Cow-Parfney, to enrich the spirit that is prepared from that plant; as fodder, goats are said to be extremely fond of it, and cows and sheep to eat it; the down of the seeds mixed with cotton or fur has been manufactured into stockings and other articles of cloathing^b.

2. This species has been confounded with the foregoing. Professor De Saussure says it differs in its woody stem, its very narrow leaves with salient glands on their edges, the much more lively colour of the flower, shorter siliques, and the air entirely different. Haller adds, that the stem is only a foot or eighteen inches in height with a branch from almost every axil; the flowers almost the same with the foregoing, but the leaves totally different.

Monf. Villars says, that the flowers do not come in a spike, like those of the preceding, but terminate the stem, and are fewer in number.

It is an alpine plant, but is common low down in the beds of the alpine torrents; as in the *Vevaise*, and the *grande Eau* near Aigle; in both of which I gathered it abundantly. Found also in Provence, Dauphiné, Savoy, &c. It flowers in July and August. Introduced in 1775 by Drs. Pitcairn and Fothergill.

3. This differs from the first species in having flowers twice the size; the leaves broader, regularly alternate not scattered, very smoothly tomentose on both sides^c. The stem is round, eighteen inches to upwards of two feet in height, and erect^d. Both this and the first differ from the following species in having unequal corollas with entire petals; the stamens converging at the base to the style; the pistil bent down; the leaves not opposite, and when they first break forth rolled back^e.

Native of Denmark, Silesia, and Siberia.

4. Root full of shoots, with numerous fibres, sending out from the upper part runners of a considerable thickness, which creeping under the surface, spread widely and propagate the plant. Stem from three to six feet high, upright, very much branched, cylindric, somewhat quadrangular at bottom, hirsute and purplish: with soft spreading hairs, flattened at the insertion of the branches; which are like the stem, nearly upright, the upper generally solitary, alternate. Leaves ovate-lanceolate, the uppermost alternate, finely toothed at the edges, the serratures hooked and blunt, hirsute with soft hairs on both sides, half-stem-clasping running a

little way down the stem, the middle of the base higher than the sides of it. Flowers large, showy, purple or flesh-coloured, somewhat bell-shaped, and hanging down a little, on peduncles, solitary, alternate: calyx upright, angular at the base, deeply divided into four segments, united at bottom by a glandular receptacle; the base within villose: petals obcordate, emarginate, with white claws, and twice the length of the calyx; filaments four nearly as long again as the other four, but the longest not half so long as the petals; anthers oblong, two-celled, yellowish or white, after shedding their dust bowed: germ oblong, villose, four-cornered, grooved, crowned with very minute glands, the corners purple; style hanging down, and longer than the stamens, crooked, white: seed-vessel three inches long, obtusely four-cornered and grooved, slightly hirsute: seeds pale brown, ovate; viewed with a magnifier on one side convex and roughish, on the other flatish and grooved^f.

Native of most parts of Europe, by the sides of ditches, ponds, lakes and rivers, flowering in July and August.

The leaves, and particularly the top shoots when slightly bruised have a delicate cool fragrance, resembling scalded codlings, whence its name of *Codlings and cream*; this fragrance is very soon lost after the plant is gathered. It is also called *Great hairy coddled Loose-strife*. Horses, sheep, and goats eat it; and if it were found to be an acceptable fodder, it might be cultivated to advantage in wet situations^g.

It varies with white flowers, and also with variegated leaves, in which state it is sometimes sold by the gardeners; but having a creeping root, it is apt to increase too much^h.

5. This invariably differs from the foregoing in its corolla, root and pubescence. The corolla is in general not more than one-third of the size; the root does not creep; and both stem and leaves are covered with numerous soft hairs, which give the whole plant a hoary appearance. The plant is also much smaller, and in general not so much branched: the leaves sessile but not decurrent, the serratures few and distant: the calyx is also very different; and the segments of the stigma are scarcely rolled backⁱ.

It grows in the same places, and flowers at the same time with the foregoing.

6. The root has, on its upper part, little buds of a bright red colour. Stem from one to three feet high, upright, red, cylindric, scarce perceptibly downy, sometimes branched at top, but often single. Leaves opposite, except the uppermost, on very short petioles uniting at the base, sharp at the end, finely serrate with unequal teeth, somewhat hooked, smooth on the upper side, on the under paler, and very slightly hairy, the downiness is just perceptible on both surfaces, according to Withering, but most underneath. The bottom leaves are often of a bright red colour. Calycine leaflets four, lanceolate, with a conspicuous midrib slightly hairy on the outside and at the edges. Petals obcordate, deeply emarginate, pale purple, veined with deeper purple lines. Stamens mostly on one side of the style, which is bowed upwards and reddish. Germ four-cornered: style the length of the stamens, thickening a little at top; segments of the stigma spreading, but not rolled back^k.

Native of Europe, in woods and hedges; sometimes in moist meadows, but more frequently in dry gravelly soils, in courts, neglected walks, and on walls; I have often remarked it on old trees, especially willows. It flowers from June to August. Mr. Hudson, marks it as biennial, and indeed it has not the appearance of being perennial, like most of the others.

This, like most of the rest, varies with a white

^f Curtis, Linn. Hudf. With. and Stokes.

^g Curtis and Withering.

^h Curtis.

ⁱ Ibid.

^k Curtis, Linn. Hall. With. and Stokes.

^b Haller, Curtis, Withering, Lightfoot.

^c Linn. spec.

^d Krocke.

^e Linn. spec.

corolla, as also with three or four leaves at each joint.

Schreber has a species under the name of *Epilobium roseum*, which Retzius determines to be a variety of this species; to his opinion I willingly subscribe, suspecting that the species of this genus, as in many others, have been too much multiplied. The same author has another, under the title of *E. parviflorum*: see n. 13.—and Jacquin mentions a third, which he calls *E. alpestre* (Hall. 996. β.).

7. One of the most striking characters of this is the apparent squareness of the stalk, which arises from projecting lines running from the leaves down it: to this we may add the narrowness of its leaves; the uncommon length of its pods, and its undivided stigma, a character first noticed by Ray¹. The lower leaves are lanceolate, the upper ones narrower, all ferrate and smooth; flowers small, purple.

Willich remarks, that the young leaves have livid spots, and that the top of the plant, whilst tender, hangs down: he confirms Ray's observation, of the simplicity of the stigma. Mr. Curtis has sometimes found a variety, with leaves nearly as broad as those of the *montanum*, and placed on petioles of a considerable length.

Native of Europe, the East Indies, China and Cochinchina; with us not uncommon, generally met with in marshes, and by the sides of rivulets and ditches; as in the lane from Newington to Hornsey-wood; near Bungay in Suffolk; Alconbury in Huntingdonshire, &c. flowering in July and August.

Haller doubts whether this and the next be distinct species, from the foregoing; Scopoli on the contrary has no doubt of it. Villars affirms that this can scarcely be distinguished from the preceding.

8. Stem cylindric, upright, smooth or pubescent, a foot high. Leaves sessile, smooth, obscurely toothed, varying extremely in breadth; in the axils of these appear to be bundles of smaller ones, which are only small leafy branches. Calyx a little hairy on the outside: petals reddish or pale purple, emarginate not cloven to the middle: the anthers when they are shedding their pollen adhere firmly to the stigma so as hardly to be separated without violence, but before and after that time they do not touch it: stigma thick, club-shaped, yellowish white, slightly cloven at top into four parts. Siliques peduncled^m.

Mr. Ray affirms that the calyx is five-parted: that it is much lower than the foregoing, the leaves smaller, of a darker green, and not toothed about the edge.

Monf. Villars describes it as being lower than any of the preceding, the stems single, little branched, and half a foot high; the leaves narrow, almost linear, mostly alternate, obtuse and wider at the base; the flowers small, pale red, emarginate. He says, that there are intermediate specimens which so bring together this, and *E. montanum* and *tetragonum*, that it is difficult to distinguish them; that this however is marked by the form of its leaves, the branches being approximating, and by its truncate root full of fibres: he adds, it is clear that this is not *Chamænerion palustre* of Scopoli, because the petals are entire; and he is of opinion that Scopoli has given this name to the second species.

Native of Europe, on marshes, bogs, and by the sides of lakes.

9. This is a creeping plant, flowering early in the spring with sessile germs: it is three or four inches, or hardly a span high, decumbent at bottom, then upright, and bears one or two flowers at the top. Leaves quite smooth, sometimes slightly toothed. Siliques quite smooth, four or five times longer than the leavesⁿ.

Native of the mountains of Lapland, Denmark, Switzerland, Silesia, Savoy, Dauphiné, Britain; as on Cheviott hills, near Settle, about Buckbarrow-

¹ Curtis.

^m Linn. Withering. Woodw. Relh. Leers.

ⁿ Linn. Lightf. Haller.

well, and in many parts of Scotland, by the sides of rivulets, and in sandy places.

10. Stem straight round six feet high, with ascending branches. Leaves lanceolate, acute at both ends, subpetioled. Peduncles one-flowered. Flowers superior, yellow. Capsule columnar, eight-cornered, crowned with the permanent calyx. Seeds not pappose, allied to *E. hirsutum*, but in that the leaves are opposite, ferrate, decurrent, stem-clasping.

This is a native of Cochinchina^o.

11, 12. Natives of New Zealand^p.

13. Native of Germany.

14. This is very nearly allied to *E. alpinum* in its size, habit, disposition of the leaves, flowers and filiques: their stems at bottom decumbent are thence ascending, they are simple and commonly two or three inches high, the leaves are opposite; those of *E. alpinum* are elliptic, obtuse, very seldom toothed, the upper ones are narrower and alternate; both upper and lower are of a bright green: the leaves of this are wider, oval, sharp, always toothed, and of a dusky green inclining to black; the flowers are bright red, a little emarginate, middle-sized; the filiques are few, small, at an obtuse angle in the first; square, very long, and straight in the second. They both grow on the summits of the highest mountains, near the snow, where the filiques are often as long as the stem. It is possible that they may be only varieties of *E. montanum* and *tetragonum*^q.]

PROPAGATION AND CULTURE.

These plants propagate spontaneously both by seeds and runners: and require to be restrained rather than increased by the hand of art. They may however be admitted to advantage in remote shady corners, or on rock-work. They require no culture, except such as is necessary to keep them within bounds.

EPIMEDIUM, (of Pliny, *Epimedium* of Dioscorides. From *ἐπι* & *Μῆδιον*; being larger than another plant named *Medium*: this derivation is very unsatisfactory, but we have not a better to substitute.)

Engl. Barrenwort. Fr. Chapeau d'Eveque.

Lin. gen. n. 148. Reich. 154. Schreb. 193.

Tourn. 117. Juss. 287.

Cl. 4. 1. Tetrandria Monogynia.

Nat. order of Corydales.—Berberides Juss.

GENERIC CHARACTER.

CAL. Perianth four-leaved: leaflets ovate, obtuse, concave, expanding, small, placed directly (not alternately,) below the petals, caducous, (with a single bracte at the base of two of them, f.)

COR. Petals four, ovate, obtuse, concave, expanding. Nectaries four, cup-form, (flipper-form, f.) with obtuse bottoms, of the size of the petals, and leaning on them, affixed by the edge of the mouth to the receptacle.

STAM. Filaments four, subulate, pressing on the style. Anthers oblong, erect, two-celled, two-valved, gaping from the base towards the tip, with a free dissepiment.

PIST. Germ oblong. Style shorter than the germ, length of the stamens. Stigma simple.

PER. Silique oblong, acuminate, one-celled, two-valved.

SEEDS very many, oblong.

ESSENTIAL CHARACTER.

Nect. four, cup-form, leaning on the petals. Cor. four-petalled. Cal. very caducous. Fruit a silique.

SPECIES.

1. *Epimedium alpinum*. Alpine Barrenwort.

Lin. spec. 171. Reich. 1. 330. hort. cliff. 37.

ups. 29. Scop. carn. n. 169. Mill. fig. t. 133.

Berg. phyt. 2. 135.

Epimedium. Baub. pin. 323. Baub. hist. 3. 709.

(descr. non fig.) Tabern. ic. 774. Dod. pempt.

599. Lob. hist. 176. Ger. 389. emac. 480.

^o Loureiro.

^p Forster.

^q Villars.

Park. theat. 1365. f. 1366. 1. *parad.* 283. f. 285. 6. *Raii hist.* 1330.

DESCRIPTION, &c.

This plant has a creeping root, from which arise many stiff smooth stalks about nine inches high, [cylindric, simple, near the root surrounded with scales, at top trichotomous. Leaves once and twice ternate, pendulous, heart-shaped ending in a point, ferrate, the serratures ending in a hair, pale green on the upper side, gray on the under. Raceme a finger's length, naked, loose, lateral, with three or four branchlets, usually two-flowered, supported by a rufous bracte. Calycine leaflets reddish, nectaries yellow, longer than the petals: stamens short, anthers acuminate: stigma yellowish, fasciated at bottom with a red ring. Seeds obliquely transverse.

Native of the Alps, and Apennines; flowering in april and may, and longer in shady places; also in Japan.—Mr. Miller affirms that he received some plants of it, which were found growing naturally in a wood in the north of England: but he was probably misinformed.

This rare and strange plant (says Gerarde) was sent to me from the French King's herbarist, *Robinus*, dwelling in Paris, at the sign of the black head, in the street called *Du bout du Monde*. I planted it in my garden, but it was dried away with the extreme heat of the sun, which happened in the year 1590, since which time it bringeth seed to perfection.—Johnson (*Ger. emac.*) adds that it grew in the garden of his friend Mr. John Milon in Oldstreet, and some other gardens about town.

PROPAGATION AND CULTURE.

It may be increased by the roots, and succeeds best in the shade, where it must every year be reduced, otherwise it will spread its roots, so as to interfere with the neighbouring plants. It deserves a place in gardens, though not showy, for its beauty and singularity.

EPIPACTIS. See *Astrantia*, *Ophrys*, *Orchis*, *Satyrion*, *Serapias*.

EPIPHYLLANTHUS. See *Xylophylla*.

EPIPOGIUM. See *Satyrion*.

EPITHYMUM. See *Cuscuta*.]

EQUISETUM, (of Pliny. *Equi seta*: horse-hair.)

Engl. Horse-tail. Fr. *Prêle*.

[*Lin. gen. n.* 1169. *Reich.* 1284. *Schreb.* 1614.

Tourn. 307. *Juss.* 17. *Hedw. theor.* 33.

Class. 24. 1. Cryptogamia Filices.

Nat. order of Filices or Ferns.

GENERIC CHARACTER.

Fructifications disposed into a long ovate-oblong spike. Each orbiculate, gaping at the base with several valves, connected by a flat shield-shaped top.

SPECIES.

1. *Equisetum sylvaticum.* Wood Horse-tail.

Lin. spec. 1516. *Reich.* 4. 372. *Fl. lapp.* 391. *suec. n.* 927. *Huds. angl.* 447. *Relb. cant.* n. 748. *Lightf. scot.* 646. *Hall. belv. n.* 1680. *Scop. carn. n.* 1252. *Pollich pal. n.* 948. *Leers herborn. n.* 779. *Villars dauph.* 3. 834. *Tabern. hist.* 562. *ic.* 253. *Ger.* 957. *emac.* 1114. 5. *Park. theat.* 1201. 5. *Raii hist.* 128. *syn.* 130.

E. sylv. tenuissimis fetis. *Bauh. pin.* 16. *theat.* 245.

—f. *Hippuris tenuissima non aspera.* *Bauh. hist.* 3. 730.

Stem spiked, fronds compound.

2. *Equisetum arvense.* Corn Horse-tail.

Lin. spec. 1516. *Reich.* 4. 372. *mat. med.* 224. *Fl. lapp.* 390. *suec. n.* 928. *hort. cliff.* 471. *Huds. angl.* 447. *Curtis lond.* 4. 64. *Lightf. scot.* 647. *Relb. cant. n.* 749. *Hall. belv. n.* 1676. *Scop. carn. n.* 1253. *Pollich pal. n.* 949. *Leers herborn. n.* 780. *Villars dauph.* 3. 835. *Gron. virg.* 123. *Blackw. t.* 217. f. 3.

E. arv. longioribus fetis. *Bauh. pin.* 16. *Park. theat.* 1202. 12. *Raii syn.* 130. *hist.* 128.

E. minus. *Fuchs. hist.* 323.—terrestre. *Bauh. hist.* 3. 730.

E. fegetale. *Ger.* 956. 3. *emac.* 1114. 3.

Fruit-bearing scape naked, barren leafy.

3. *Equisetum palustre.* Marsh Horse-tail.

Lin. spec. 1516. *Reich.* 4. 373. *Fl. lapp.* 392. *suec. n.* 929. *Huds. angl.* 448. *Lightf.* 648. *Relb. n.* 750. *Hall. belv. n.* 1677. α. *Scop. carn. n.* 1254. *Pollich pal. n.* 950. *Leers herborn. n.* 781. *Villars dauph.* 3. 835. *Lob. ic.* 795. *Ger.* 952. *emac.* 1114. 4. *Raii syn.* 131. *hist.* 129.

E. pal. minus. *Park. theat.* 1200.

E. pal. brevioribus fetis. *Bauh. pin.* 15.

β. *E. pal. minus polystachion.* *Bauh. pin.* 16. *prodr.* 24. *Raii syn.* 131. t. 5. f. 3. *hist.* 129.

Stem angular, fronds simple.

4. *Equisetum fluviatile.* River Horse-tail.

Lin. spec. 1517. *Reich.* 373. *Fl. lapp.* 393. *suec. n.* 930. *Huds. angl.* 448. *Lightf.* 649. *Relb. n.* 751. *Hall. belv. n.* 1675. *Scop. carn. n.* 1255. *Pollich pal. n.* 951. *Leers herborn. n.* 782. *Blackw. t.* 217. f. 2.

Equisetum. *Camer. epit.* 770.—majus. *Ger.* 955. 1. *emac.* 1113. *Raii hist.* 128. *syn.* 130.—palustre. *Park. theat.* 1200. 1.—longioribus fetis. *Bauh. pin.* 15. *theat.* 242.—majus aquaticum. *Bauh. hist.* 3. 728.

Hippuris. *Lob. ic.* 793.

Stem streaked, fronds almost simple.

5. *Equisetum limosum.* Smooth Horse-tail.

Lin. spec. 1517. *Reich.* 373. *Fl. suec. n.* 931. *Huds. angl.* 448. *Lightf.* 648. *Relb. n.* 752. *Leers herborn. n.* 783. *Gouan illustr.* 80. *Hall. belv. n.* 1677. β.

E. nudum lævius. *Raii syn.* 131. t. 5. f. 2.

Stem almost naked, smooth and even.

6. *Equisetum hyemale.* Rough Horse-tail.

Lin. spec. 1517. *Reich.* 374. *mant.* 504. *Fl. lapp.* 394. *suec. n.* 931. *Huds. angl.* 448. *Lightf.* 650. *Relb. n.* 753. *Hall. belv. n.* 1679. *Pollich pal. n.* 952. *Leers herborn. n.* 787. *Gron. virg.* 196. *Villars dauph.* 3. 835.

E. nudum. *Ger.* 955. *emac.* 1113. 2. *Raii syn.* 131. *hist.* 129.

E. junceum ramosum. *Park. theat.* 1201. 8.

E. foliis nudum ramosum. *Bauh. pin.* 16. *Raii hist.* 130. 8, 9. *syn.* 132.

Stem naked scabrous subracemed at the base.

7. *Equisetum giganteum.* Giant Horse-tail.

Lin. spec. 1517. *Reich.* 374.

E. altissimum ramosum. *Plum. spec.* 11. *ic.* 125. f. 2.

Stem streaked arborescent, fronds simple strict spike-bearing.

DESCRIPTIONS, &c.

Roots perennial, creeping.

They are leafless herbs, with a hollow streaked stem, either simple or branched, the branchlets usually disposed in whorls; it is jointed, and the joints are surrounded with a toothed sheath. The vernal stems usually bear a sort of cone and soon perish, these are succeeded by others without cones, and lasting much longer. Perhaps the former are males, and the latter females, in which the sex has not been discovered. Hedwig takes the little balls for the stigma, and the bristles covered with dust, converging in wet, and spreading in a dry situation; for stamens^a.

Linneus, Scopoli, Curtis and others consider the powder in the spikes as the seed. M. Adanson has removed the Horse-tails from the Cryptogamous plants, and placed them in the family of Pines, from which they differ in every respect^b.

1. This grows to the height of a foot or eighteen inches, and even of three or four feet. Stem slender, scabrous, angular, the angles edged with short spinules, scarcely visible without a microscope. Sheaths large, lax, membranaceous, yellowish, commonly divided into three or four deep, triangular dents; and at the base of the sheaths generally twelve green acute dents coalesce. The whorls

^a Jussieu. ^b Scop. and Curtis.

are hardly an inch asunder. There are twelve or more (sixteen to twenty-four *Leers*, twenty-four to thirty *Scop.*) branchlets, or leaves as some call them, in a whorl; these are very slender, about five inches long, quadrangular, and beset with several other secondary whorls, having five to seven branchlets on each; so that the whole resembles a Pine-tree in miniature. The flowering spike is at the end of the frond^c.

Native of most parts of Europe in woods and shady places; flowering in april and may. According to Linneus it is a principal food of horses in some parts of Sweden. Scopoli affirms that it is noxious to kine, making them shed their teeth, and bringing on them a diarrhæa. This is also said of the next species.

2. The naked flowering stems appear early in the spring, and soon decay: they are the thickness of a large wheat straw, a hand's breadth or more in height, upright, yellowish, with from two to five joints, covered with membranous ribbed sheaths, divided at top into numerous segments or teeth. Spike terminating, oblong, swelling, about an inch in length, throwing out a greenish powder when ripe, which moves as if it were alive, especially if it be breathed upon: every particle has three or four, rarely five fine pellucid threads, club-shaped at the end, which occasion the motion, by extending and curling themselves up. M. Adanson takes this dust to be the pollen, but Mr. Curtis could never observe any sort of explosion in it, and therefore rather inclines to think that it is the seed. The fronds, or leafy stems, as they are commonly called, appear after the others; they are a foot or more in height, durable, scabrous; the sheaths divided into numerous, pointed, fuscous dents: branchlets about eight in a whorl (seven to twelve *Lightf.* twelve to fifteen *Leers*) generally simple, but sometimes emitting a branch or two.

Native of most parts of Europe, the Levant, Japan, and North America, in corn fields and wet meadows, flowering in march, april and may. It is a troublesome weed and difficult to extirpate; is reputed noxious to cattle, especially kine, which it affects with a diarrhæa; they do not readily meddle with it^d. The country people call it *Horse-pipe* and *Snake-pipe*. It is supposed to indicate subterraneous flowing waters or springs.

3. The stem is a foot or eighteen inches high, nearly smooth, channelled with five or six deep furrows; the sheaths are divided into seven or eight acute, black dents, with white edges; from these, at flowering time, come out six to ten furrowed, smooth, simple, short branchlets, becoming afterwards longer. Spike terminating, and turning black before it disperses the dust; which is very lively, when fresh from the spike.—In marshes and ditches, flowering in june.

β. has smaller fronds, almost all the branchlets having a spike at the end, but that at the end of the stem twice as large as the rest^e.

This is also injurious to kine, as Haller experienced. In Scotland they call it *Paddock-pipe*.

4. This is the largest of all the European species. The stem is three or four feet high, the thickness of a finger, and sometimes near an inch in diameter, streaked not furrowed, smooth, soft, of a pale or whitish colour at first, but blackish in decay; joints numerous; sheaths streaked, and divided into as many long, linear dents as there are branchlets in the whorl, that is from twenty-four to thirty, thirty-six and even forty; the branchlets or leaves are quadrangular and generally simple. The spikes grow distinct from the fronds on scapes, but from the same root, these come out earlier, are a foot or eighteen inches in height, and the spikes are replete with a blueish powder^f.

Haller tells us that this species was eaten by the common people among the Romans; and Linneus

affirms that rein-deer, who refuse hay, will however eat this, that it is cut as fodder for kine with a view to increase their milk, but that it is not so acceptable to horses.

Native of Europe, on the banks of rivers, lakes, ponds and ditches: flowering in may and june.

5. This grows three or four feet high, and is often quite destitute of leaves, but sometimes produces a few straggling ones. The stem is smooth, channelled with twelve or more furrows, and terminated with a black oval spike. The dents of the sheath are acute and black, and of the same number with the furrows^g.

Haller is of opinion that this is only a variety of the *palustre*. Linneus and Leers suspect it to be a variety of the foregoing.

Watery places, lakes, ponds and ditches: flowering in may and june.

6. Stems evergreen, about eighteen inches high, naked and unbranched for the most part, but sometimes emitting two or three lateral branches near the base: they are furrowed with eighteen or twenty rough, obtuse angles, and many of the joints are three inches asunder. The sheaths are black at the base and edge, and obscurely indented with as many short, obtuse teeth as the stem has furrows. The flowering-spike terminates the stem, and the sheath which immediately subtends it, is pale at the base, but black at the edge, distinctly and acutely toothed.

This is the best species for polishing wood and metal, as being the hardest and roughest. Hence our old writers called it *Shave-grass*. It is much used by the white-smiths and cabinet-makers, under the name of *Dutch Rusbes*. In Northumberland the dairy-maids scour their milk-pails with it^h. Gerarde says, that the women scour their pewter and wooden things of the kitchen therewith, and thence call it *Pewterwort*; and that the fletchers and comb-makers do rub and polish their work with it.

Linneus informs us that it is salutary to horses, noxious to kine, who lose their teeth by feeding on it, and that sheep avoid itⁱ. How this may be I know not; but I am persuaded, with Mr. Lightfoot, that the pasture must be very bad, where any cattle are compelled to eat such food.

Native of Europe, by river sides, in bogs and watery places, and in wet marshy places in woods: flowering in july and august; also of Japan.

7. We have no description of this species.—It is a native of South America.

PROPAGATION AND CULTURE.

Though the Horse-tails be inhabitants of the water, or at least flourish best where they can lodge their perennial creeping roots in a wet soil or strong clay which holds the wet, yet they will grow without difficulty in a garden, especially near water, or under a north wall, or in the shade: they require only to be kept within bounds, as they run much at the root; it is better therefore to plant them in pots, plunged in the earth, than in the open ground.

It is not so easy to extirpate them from cultivated lands. Haller says that he tried in vain to accomplish it by plowing, dunging, and other methods; and that any one who published the secret of destroying this unpropitious weed, so injurious to kine, would merit a considerable reward. I should conceive that draining lands infested with it, would have the best chance of removing the evil.

EQUISETUM. See *Geratophyllum*, *Chara*, *Hippuris*.

——— *palustre*. See *Elatine*.

ERACLISIA hexagyna of Forskahl. The same with *Andrachne telephoides*.

ERAGROSTIS. See *Briza*.

ERANGELIA. See *Galanthus*.

ERANTHEMUM. (From *ερα*, the earth, and *ανθος*, a flower.)

Lin. gen. n. 23. Reich. 24. Schreb. n. 30. Juss. 110.

^g Lightfoot.

^h Ibid.

ⁱ Fl. succ. from Loefel.

Class.

^c Lightf. and Leers.

^e Leers, Lightf.

^d Curtis, Lian. Leers, Lightf. Haller.

^f Lightf. Leers, Haller.

Class. 2. 1. Diandria Monogynia.
Nat. order of *Aggregatæ*. *Vitices*. Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-cleft, tubular, very narrow, upright, short, acuminate, permanent.

COR. one-petalled, funnel-form. *Tube* filiform, extremely long. *Border* five-parted (four-parted sometimes,) flat: *divisions* obovate.

STAM. *Filaments* two, very short, in the mouth of the corolla. *Anthers* subovate, compressed, beyond the tube.

PIST. *Germ* ovate, very small. *Style* filiform, length of the stamens. *Stigma* simple.

PER.

SEEDS

OBS. *I saw but a single specimen, and therefore commit it to the attentive examination of others.*

ESSENTIAL CHARACTER.

Cor. five-cleft, with a filiform tube. *Anthers* beyond the tube. *Stigma* simple. *Fruit*

SPECIES.

1. *Eranthemum capense*.

Lin. spec. 12. *Reich.* 1. 22. *Fl. zeyl.* n. 15. *amœn.* 385. *Herm. parad.* 153. *Amm. herb.* 232. (*Ephemerum*). *Raii suppl.* 529. n. 10. (*Centaureum*).

Leaves lanceolate-ovate petioled.

2. *Eranthemum angustifolium*.

Lin. syst. 57. *Reich.* 22. *Burm. afr.* 130. t. 47. f. 3. *Pluk. mant.* t. 445. f. 6. (*Thymelæa*). *Raii suppl.* 245. 4. (*Valerianoides*). *Comm. hort.* 2. 221. t. 111?

Selago dubia. *Lin. spec.* 877.

Leaves linear remote patulous.

3. *Eranthemum parvifolium*.

Lin. syst. 58. *Reich.* 22. *mant.* 171. *Berg. cap.* 2. *Comm. amst.* 2. 119. t. 60.

Leaves ovate-linear imbricate.

4. *Eranthemum falsifoloides*.

Lin. syst. 58. *suppl.* 82.

Leaves fleshy nearly columnar linear very smooth, racemes axillary, they and the calyxes pubescent, tube bent back.

5. *Eranthemum spinosum*.

Lour. cochinch. 19.

Leaves ovate opposite, stipules spiny, flower solitary lateral.

DESCRIPTIONS, &c.

These are undershrubs or herbs, natives of the Cape of Good Hope. *Leaves* opposite or alternate. *Flowers* in terminating spikes^a.

1. The herb has the appearance of *Pblox*, *Lychnis*, or *Mirabilis*. *Leaves* lanceolate-ovate or ovate, sharp to both ends, opposite, on long petioles, quite entire, smooth, veined, large. *Stems* long, terminated by one or three spikes from lanceolate, green, imbricate bractes; within each of these a long purple flower, like that of *Pblox*^b.

It has the air of *Chironia*, but should be examined more carefully^c.

2. *Stem* erect, branched. *Leaves* crowded. *Racemes* simple, very long, erect. *Tube* of the corolla very long, with a small obtuse border. *Anthers* incumbent, linear^d.

3. *Leaves* short. *Bractes* ovate^e.

4. A shrub resembling *Salsola*, but with axillary, pubescent racemes at the ends of the branches: pedicels reflex, and at the origin of each three subulate bractes. *Calyx* five-parted, with subulate, pubescent divisions: tube of the corolla longer than the calyx, bent back in the middle; divisions of the border ovate, acuminate^f.

5. *Stem* suffruticose, a foot high, cespitose, erect, with short rising branches, spiny stipules and bractes. *Leaves* small, quite entire, hairy. *Flower* pale violet, solitary, lateral, peduncled. *Calyx* two-leaved, with acuminate erect leaflets. *Tube* of the corolla curved at the base; border five-cleft, spreading. *Filaments* placed in the tube, and exceeding it in

^a Jussieu.

^b Linn. zeyl.

^c Linn. spec.

^d Ibid.

^e Bergius.

^f Linn. suppl.

length; anthers oblong, incumbent. *Style* short, with a thickish stigma. *Capful* superior, ovate, two-celled, many seeded.

Native of Africa, in the suburbs of Mosambique^g.

EREBINTHUS. See *Galega*.

ERESIA. See *Theophrasta*.]

ERICA, (of Pliny. *Ἐρικων* of Theophrastus. From *ἐρίκω*, or *ἐρίκω*, *frango*, to break; from its supposed quality of breaking the stone in the bladder.)

Engl. *Heath*. Fr. *Bruyere*.

Lin. gen. n. 484. *Reich.* 524. *Schreb.* 659.

Tourn. 373. *α.* *Juss.* 160. *Gartn.* t. 63.

Class. 8. 1. Octandria Monogynia.

Nat. Order of *Bicornes*. *Ericæ* Juss.

GENERIC CHARACTER.

CAL. *Perianth* four-leaved; leaflets ovate-oblong, permanent.

COR. one-petalled, bell-form, four-cleft, often bellied.

STAM. *Filaments* eight, capillary, inserted into the receptacle. *Anthers* two-cleft at the tip.

PIST. *Germ* roundish, superior. *Style* filiform, upright, longer than the stamens. *Stigma* crowned, four-cornered, four-cleft.

PER. *Capful* roundish, smaller than the calyx, covered, four-celled, four-valved: *partitions* meeting with the futures, (opposite to the futures, G.)

SEEDS numerous, very small.

OBS. *There are some species with a double calyx.*

The figure of the corolla as to ovate and oblong differs in the different species.

The anthers in some are emarginate; in others two-horned, or awned: included, or standing out.

The stamens in some are longer, and in others shorter than the corolla.

The stigma is also different in different species.

ESSENTIAL CHARACTER.

Cal. four-leaved. Cor. four-cleft. *Filaments* inserted into the receptacle. *Anthers* cloven. *Caps.* four-celled.

SPECIES.

* *Anthers* awned, leaves opposite.

1. *Erica vulgaris*. Common *Heath*.

Lin. spec. 501. *syst.* 363. *Reich.* 2. 168. *diff.* 1. *Fl. lapp.* n. 141. *suec.* 336. *Thunb. monogr.* 45. *Gartn. fruct.* 1. 302. *Huds. angl.* 165. *Wither. arr.* 396. *Lightf. scot.* 203. *Relb. cant.* n. 297. *Curtis lond.* 5. t. 30. *Hall. belv.* n. 1012. *Scop. carn.* n. 460. *Pollich pal.* n. 378. *Leers herb.* n. 293. *Neck. gallob.* 182. *Gunn. norv.* n. 15. *Fl. dan.* t. 677. *Gmel. sib.* 4. 129. n. 20. *Pallas ross.* 2. 59. *Krock. silës.* n. 597. *Villars dauph.* 3. 514. *Plenck, ic.* t. 301. *Park. theat.* 1480. 1. *Raii hist.* 1713. *syn.* 470.

E. vulg. glabra. *Baub. pin.* 485.

E. vulg. f. pumila. *Ger.* 1196. 1, 2. *emac.* 1380. 1.

E. prima. *Matth.* 152. *Camer. epit.* 75.

E. vulg. humilis sempervirens fl. purpureo & albo. *Baub. hist.* 1. 354.

β. *E. vulg. hirsuta.* *Ger. emac.* 1380. *Raii syn.* 471.

Corollas bell-shaped almost equal, *calyxes* double (the inner longer than the corolla) *leaves* sagittate (imbricate in four rows, St.)

[2. *Erica lutea*. Yellow *Heath*.

Lin. syst. 364. *Reich.* 2. 169. *mant.* 234. *Berg. cap.* 115. *Thunb. monogr.* 33. n. 49.

Corollas ovate acuminate, *flowers* heaped, *leaves* linear.

Leaves in threes.

3. *Erica halicacaba*. Purple-stalked *Heath*.

Lin. spec. 507. *syst.* 364. *Reich.* 2. 169. *amœn.* 6. *afr.* 15. *Thunb. monogr.* 33. n. 51.

Corollas ovate inflated, *style* included, *flowers* solitary.

4. *Erica regerminans*.

Lin. syst. 364. *Reich.* 2. 169. *mant.* 232. *Thunb. mon.* 35. n. 54.

Corollas ovate, *style* included; *calyxes* acute, *flowers* racemed.

^g Loureiro.

5. *Erica Monfoniana*. Bladder-flowered Heath.
Lin. syst. 364. suppl. 223. Thunb. mon. 34. n. 52.
t. 1.
Flowers at the ends of obtuse branchlets, calyx caly-
cled, corolla oblong inflated, style included.
6. *Erica mucosa*. Mucous Heath.
Lin. syst. 364. Reich. 2. 170. mant. 232. Thunb.
mon. 46. n. 76.
E. ferrea. Berg. cap. 112.
Corollas subglobular mucous, style included.
7. *Erica urceolaris*. Hairy-flowered Heath.
Ait. hort. kew. 2. 15. Berg. cap. 107. Thunb.
monogr. n. 55.
Flowers umbelled, calyxes lanceolate, corollas ovate-
conical villose, style included.
8. *Erica marifolia*. Marum-leaved Heath.
Ait. hort. kew. 2. 15.
Leaves ovate pubescent whitish underneath, corollas
ovate-conical, style of a middling length.
9. *Erica Bergiana*.
Lin. syst. 364. Reich. 2. 170. mant. 235. Thunb.
mon. 48. n. 81.
Calyxes reflex, corollas bell-shaped, style included.
10. *Erica depressa*.
Lin. syst. 364. Reich. 2. 171. mant. 230. Thunb.
mon. 33. n. 50.
Stem depressed, flowers few, corollas bell-shaped, style
included.
11. *Erica pilulifera*.
Lin. spec. 507. syst. 364. Reich. 2. 171. Thunb.
mon. 40. n. 65.
Flowers umbelled, corollas bell-shaped, style included.
12. *Erica viridi-purpurea*.
Lin. spec. 502. syst. 364. Reich. 2. 171. hort.
cliff. 148. Sauv. monsp. 170.
E. virescens. Thunb. mon. n. 59.
E. major, floribus ex herbaceo-purpureis. Bauh.
pin. 485. Park. theat. 1481. n. 3. Raii hist.
1715.
E. corios folio 3. Clus. hist. 1. 42.
Flowers scattered, corollas bell-shaped, style included.
13. *Erica pentaphylla*.
Lin. spec. 506. syst. 364. Reich. 2. 171. Seba
mus. 1. 32. t. 21. f. 2.
Flowers pubescent, corollas bell-shaped, style included.
14. *Erica nigrita*.
Lin. syst. 364. Reich. 2. 172. mant. 65. Burm.
prodr. 11. Thunb. mon. 35. n. 53.
E. laricina. Berg. cap. 94. Seba mus. 2. 11. t. 9.
f. 7.
Calyxes imbricate three-flowered sessile, corollas bell-
shaped, style included.
15. *Erica planifolia*.
Lin. spec. 508. syst. 364. Reich. 2. 172. Berg.
cap. 100. Pluk. mant. t. 347. f. 1. Thunb.
mon. 38. n. 60.
Leaves spreading very much, corollas bell-shaped, style
standing out.
16. *Erica scoparia*. Small green-flowered or brush Heath.
Lin. spec. 502. syst. 364. Reich. 2. 172. Sauv.
monsp. 170. Park. theat. 1481. n. 4. Villars
dauph. 3. 515. Thunb. mon. 48. n. 80.
E. major scoparia, foliis deciduis. Bauh. pin. 485.
E. scoparia flosculis herbaceis. Lob. ic. 2. 215.
E. pyramidalis. Ger. 1197. 6. emac. 1381. 6.
E. coris folio 4. Clus. hist. 1. 42.
E. arborecens, flor. luteolis vel herbaceis minimis.
Bauh. hist. Raii hist. 1715.
Corollas bell-shaped, stigma standing out peltate.]
17. *Erica arborea*. Tree Heath.
Lin. spec. 502. syst. 365. Reich. 2. 173. hort.
cliff. 47. Hall. belv. n. 1014. Sauv. monsp.
170. 46. Thunb. mon. 40. n. 63.
E. maxima alba. Bauh. pin. 485.—major fl. albo.
Ger. emac. 1381. f. 3.
E. coris folio 1. Clus. hist. 1. 4.—maxima alba.
Park. theat. 1481. 1. Raii hist. 1714.
Branchlets hoary, corollas bell-shaped, style standing out.
- [18. *Erica vespertina*.
Lin. syst. 365. suppl. 221.
E. calycina. Thunb. mon. n. 78.
Corollas bell-shaped, style standing out,
19. *Erica cruenta*. Bloody-flowered Heath.
Ait. hort. kew. 2. 16.
Leaves smooth, bractes remote, calyxes awl-shaped di-
lated at the base, corollas cylindrical incurved, style
standing out.
Leaves in fours.
20. *Erica ramentacea*. Slender-branched Heath.
Lin. syst. 365. Reich. 2. 173. mant. 65. Thunb.
mon. 51. n. 87.
E. multumbellifera. Berg. cap. 110.
Leaves bristle-shaped, corollas globular, style included,
stigma doubled.
21. *Erica persoluta*. Blush-flowered Heath.
Lin. syst. 365. Reich. 2. 173. mant. 230. Thunb.
mon. 39. n. 62.
E. subdivaricata. Berg. cap. 114.
Calyxes ciliate, corollas bell-shaped, style included.
22. *Erica strigosa*. Dwarf downy Heath.
Ait. hort. kew. 2. 17.
Leaves pubescent ciliate, corollas bell-shaped smooth,
style standing out.
23. *Erica Tetralix*. Cross-leaved Heath.
Lin. spec. 502. syst. 365. Reich. 2. 174. hort.
cliff. 148. fl. suec. n. 337. Hudf. angl. 166.
Witber. arr. 398. Curtis lond. 1. t. 21. Lightf.
scot. 205. Relb. cant. n. 298. Fl. dan. t. 81.
Neck. gallob. 181. Krock. siles. n. 598. Thunb.
mon. 41. n. 66.
E. ex rubro nigricans scoparia. Bauh. pin. 486.
E. major flore purpureo. Ger. emac. 1382. n. 4.
(not the figure).
E. pumila. Park. theat. 1483. n. 5. 1482. f. 5.
E. brabantica folio coridis hirsuto quaterno. Bauh.
hist. 1. 358. Raii hist. 1714. syn. 471.
E. fol. cor. 13. Clus. hist. 46.
Leaves ciliate, flowers in heads, corollas ovate, style
included.
24. *Erica pubescens*.
Lin. spec. 506. syst. 365. Reich. 2. 174. Thunb.
mon. 38. n. 61.
β. E. parviflora. Lin. spec. 506. Thunb. mon. t. 5.
Leaves rugged, flowers sessile lateral, corollas ovate,
style included.
25. *Erica abietina*. Fir Heath.
Lin. spec. 506. syst. 365. Reich. 2. 174. hort.
cliff. 148. Berg. cap. 105. Thunb. mon. 42.
n. 68. Buxb. cent. 4. 25. t. 41, 42. Raii
dendr. 96. Seba mus. 1. 31. t. 21. f. 1.
Flowers sessile, corollas fig-shaped, style included.
26. *Erica mammosa*.
Lin. syst. 365. Reich. 2. 175. mant. 234. Thunb.
mon. 42. n. 69.
Corollas fig-shaped, style standing out.
27. *Erica caffra*.
Lin. spec. 502. syst. 365. Reich. 2. 175. hort.
cliff. 148.
Leaves pubescent, flowers beaped, corollas ovate, style
standing out.
28. *Erica sessiliflora*.
Lin. syst. 365. suppl. 222.
E. spicata. Thunb. mon. n. 71.
Flowers in a spike sessile bent down oblong, corollas
club-shaped, style standing out.
Leaves scattered.
29. *Erica fascicularis*.
Lin. syst. 365. suppl. 219.
E. octophylla. Thunb. mon. n. 72.
Leaves several linear truncated, flowers in bundles, co-
rollas fig-shaped, style included.
** Anthers crested, leaves in threes.
30. *Erica triflora*.
Lin. spec. 508. syst. 366. Reich. 2. 175. Thunb.
mon. n. 79. t. 5.
Flowers terminating, corollas globular bell-shaped, style
included.
31. *Erica baccans*. Arbutus-flowered Heath.
Lin. syst. 366. Reich. 2. 175. mant. 233. Thunb.
mon. n. 88. Seba mus. 1. 32. t. 21. f. 3.
Leaves imbricate, corollas globular-bell-shaped, co-
vered, style included.

32. *Erica gnaphalodes*.
Lin. spec. 508. *syft.* 366. *Reich.* 2. 176. *Thunb.*
mon. n. 75. *Pluk. mant. t.* 346. *f.* 11.
Corollas ovate covered, style included, stigma four-
parted.
33. *Erica corifolia*. *Slender-twigg'd Heath.*
Lin. spec. 507. *syft.* 366. *Reich.* 2. 176. *Berg.*
cap. 108. *Thunb. mon. n.* 77. *Seba mus.* 1. 32.
t. 21. *f.* 3. *Pluk. mant. t.* 346. *f.* 5. *Petiv.*
gaz. t. 3. *f.* 7.
Flowers umbell'd; calyxes turbinat'd; corollas ovate,
style included.
34. *Erica articularis*.
Lin. syft. 366. *Reich.* 2. 177. *mant.* 65. *Thunb.*
mon. n. 58.
Corollas ovate acuminate, style included longer than the
calyx.
35. *Erica calycina*.
Lin. spec. 507. *syft.* 366. *Reich.* 2. 177. *Berg.*
cap. 119. *Thunb. mon. n.* 78? *Seba mus.* 2. 13.
t. 11. *f.* 7.
E. gnaphalodes. Berg. cap. 119.
Calyxes spreading very much wheel-shaped; corollas
ovate, style included.]
36. *Erica cinerea*. *Fine-leaved Heath.*
Lin. spec. 501. *syft.* 366. *Reich.* 2. 177. *Huds.*
angl. 165. *Wither. arr.* 399. *Curtis lond.* 2. 25.
Lightf. scot. 204. *Relb. cant. n.* 299. *Fl. dan.*
t. 38. *Thunb. mon. n.* 85.
E. humilis. Neck. gallob. 182:—*cortice cinereo,*
arbuti flore. Baub. pin. 486.
E. tenuifolia. Ger. 1198. 7. *emac.* 1382. 7. *Raii*
hist. 1713. *syn.* 471.
E. virgata f. sexta Clusii. Park. theat. 1483. 8.
E. coris folio 6. Clus. hist. 1. 43. 2. *Lob. obs.*
620. 1.
β. E. coris fol. 5. Clus. hist. 1. 43.
E. ternis per intervalla ramulis. Baub. pin. 486.
Corollas ovate; style a little standing out, stigma capi-
tate.
- [37. *Erica paniculata*. *Panicled Heath.*
Lin. spec. 508. *syft.* 366. *Reich.* 2. 178. *Berg.*
cap. 96. *Pluk. alm. t.* 175. *f.* 2. *Seba mus.* 2. 46.
t. 44. *f.* 4.
Flowers minute, corollas bell-shaped, style standing out.
38. *Erica australis*. *Spanish Heath.*
Lin. syft. 366. *Reich.* 2. 178. *mant.* 231. *Thunb.*
mon. n. 86.
Leaves spreading; corollas cylindric, style standing out.
Leaves in fours.
39. *Erica physodes*.
Lin. spec. 506. *syft.* 366. *Reich.* 2. 178. *Berg.*
cap. 108. *Thunb. mon. n.* 89.
Flowers subsolitary, corollas ovate inflated, style in-
cluded.
40. *Erica empetrifolia*. *Crowberry-leaved Heath.*
Lin. spec. 507. *syft.* 366. *Reich.* 2. 179. *Berg.*
cap. 28. *Thunb. mon. n.* 70.
Flowers sessile lateral, corollas ovate.
41. *Erica cernua*.
Lin. syft. 367. *suppl.* 222. *Montin. in act. nov.*
upf. 2. 292. *t.* 9. *f.* 3. *Thunb. mon. n.* 90.
Flowers ovate capitate, calyxes ciliate, anthers in-
cluded.
42. *Erica retorta*.
Lin. syft. 367. *suppl.* 220. *Montin. in act. holm.*
1774. p. 297. *t.* 7. *Thunb. mon. n.* 91.
Leaves recurved, corollas ovate-oblong, style of a mid-
dling length.
43. *Erica margaritacea*. *Pearl-flowered Heath.*
Ait. hort. kew. 2. 20.
Corollas pitcher-bell-shaped, style of a middling length.
**** Anthers awnless included: leaves opposite.*
44. *Erica tenuifolia*.
Lin. spec. 507. *syft.* 367. *Reich.* 2. 179. *Thunb.*
mon. n. 2. *Berg. cap.* 116. *Seba mus.* 2. 11.
t. 9. *f.* 8.
Corolla and calyx blood-red.
45. *Erica Passerinae*.
Lin. syft. 367. *suppl.* 221. *Thunb. mon. n.* 16.

- E. Passerina. Montin. in act. nov. upf.* 2. 289. *t.* 9.
f. 1?
Corollas bell-shaped, style standing out (included, Th.)
Leaves in threes.
46. *Erica albens*.
Lin. syft. 367. *Reich.* 2. 179. *mant.* 231.
Racemes pointing one way, corollas ovate-oblong acute.
47. *Erica spumosa*. *Six-angled Heath.*
Lin. spec. 508. *syft.* 367. *Reich.* 2. 180. *amoen.* 6.
afr. 14. *Thunb. mon. n.* 14. *Berg. cap.* 103.
Seba mus. 2. 11. *t.* 9. *f.* 10. (bad.)
E. scariosa. Berg. cap. 102.
Corollas in threes covered by a common calyx, style stand-
ing out.
48. *Erica capitata*. *Woolly Heath.*
Lin. spec. 504. *syft.* 367. *Reich.* 2. 180. *Berg.*
cap. 94. *Thunb. mon. n.* 15. *Pet. gaz.* 5. *t.* 2.
f. 10. *Seba mus.* 1. 30. *t.* 20. *f.* 1. *Raii dendr.*
98. n. 35.
Flowers sessile, corollas covered with a woolly calyx,
anthers middling.
49. *Erica melanthera*.
Lin. syft. 367. *Reich.* 2. 180. *mant.* 232. *Thunb.*
mon. n. 12.
Corollas bell-shaped longer than the coloured calyx, an-
thers middling, style standing out.
50. *Erica Thunbergii*.
Lin. syft. 367. *suppl.* 220. *Montin. in act. nov.*
upf. 2. 290. *t.* 9. *f.* 2. *Thunb. mon. n.* 4.
Corollas flat with a globular tube, anthers middling,
style standing out.
51. *Erica absynthoides*.
Lin. syft. 368. *Reich.* 2. 181. *mant.* 66. *Pluk.*
phyt. t. 47. *f.* 14.
E. virgata. Thunb. mon. n. 18.
Corollas ovate-bell-shaped, style standing out, stigma
funnel-shaped.]
52. *Erica ciliaris*. *Ciliated Heath.*
Lin. spec. 503. *syft.* 368. *Loefl. itin.* 138. *Thunb.*
mon. n. 19.
E. hirsuta anglica. Baub. pin. 602.
E. 12. Clus. hist. 1. 46.
E. tenuifolia calyculata. Ger. 1198. *f.* 8. *emac.* 1382.
f. 8. *Raii hist.* 1716.
Racemes pointing one way, corollas ovate fig-shaped,
style standing out.
- [53. *Erica hispidula*.
Lin. syft. 368. *suppl.* 222. *Thunb. mon. n.* 20.
Stem hispid, leaves about three ovate acute ciliate, co-
rollas roundish.
54. *Erica petiolata*. *Rosemary-leaved Heath.*
Ait. hort. kew. 2. 21. *Thunb. monogr. n.* 7. *t.* 6.
Leaves oblong petioled, corollas in threes ovate the
length of the calyx, anthers standing out a little,
style standing out.
55. *Erica leucanthera*.
Lin. syft. 368. *suppl.* 223. *Thunb. mon. n.* 13.
Flowers in threes, calyx white, corolla bell-shaped,
anthers and style standing out.
Leaves in fours or more.
56. *Erica tubiflora*. *Tube-flowered Heath.*
Lin. spec. 505. *syft.* 368. *Reich.* 2. 182. *Seba*
mus. 1. *t.* 20. *f.* 4. *Thunb. mon. n.* 31.
Leaves subciliate, corollas club-fig-shaped, anthers and
style included.
57. *Erica curviflora*. *Curve-flowered Heath.*
Lin. spec. 505. *syft.* 368. *Reich.* 2. 182. *hort.*
cliff. 148. *Thunb. mon. n.* 30. *Seba mus.* 2.
t. 19. *f.* 5.
Leaves smooth, corollas club-fig-shaped, anthers and
style included.
58. *Erica coccinea*.
Lin. spec. 505. *syft.* 368. *Reich.* 2. 182. *Thunb.*
mon. n. 27. *Raii dendr.* 98. *n.* 24. *Seba mus.*
1. 32. t. 21. *f.* 4.
Calyxes hirsute, corollas club-fig-shaped, anthers subin-
cluded, style included.
59. *Erica conspicua*. *Long-tubed yellow Heath.*
Ait. hort. kew. 2. 22.
Leaves smooth, corollas cylindric curved very long
hairy, with a revolute border, anthers subincluded,
style standing out.
60. *Erica*

60. *Erica cerinthoides*. Honeywort-flowered Heath.
Lin. spec. 505. *syft.* 368. *Reich.* 2. 183. *Barth.*
act. 2. 57. *Breyn. cent.* 25. t. 33. *Seba mus.* 2.
t. 22. f. 4. & t. 34. f. 6. *Curt. magaz.* t. 220.
Thunb. mon. n. 33.
Corollas club-fig-shaped, stigma included cruciate.
61. *Erica fastigiata*.
Lin. syft. 368. *Reich.* 2. 183. *mant.* 66. *Burm.*
prodr. 11. *Thunb. mon.* n. 37.
Corollas salver-shaped in bundles, style included.
62. *Erica cubica*.
Lin. syft. 368. *Reich.* 2. 183. *mant.* 233. *Thunb.*
mon. n. 46.
Calyxes four-cornered, corollas bell-shaped acute, style included.
63. *Erica denticulata*.
Lin. syft. 368. *Reich.* 2. 184. *mant.* 229.
E. dentata. *Thunb. mon.* n. 39.
Calyxes toothbletted, corollas ovate-funnel-shaped, style included.
64. *Erica viscaria*. Clammy-flowered Heath.
Lin. syft. 369. *Reich.* 2. 184. *mant.* 231. *Thunb.*
mon. n. 40.
Flowers in racemes, corollas bell-shaped glutinous, style included.
65. *Erica granulata*.
Lin. syft. 369. *Reich.* 2. 184. *mant.* 234.
Calyxes subimbricate, corollas globular, style included.
66. *Erica comosa*. Tufted-flowered Heath.
Lin. syft. 369. *Reich.* 2. 185. *mant.* 234. *Thunb.*
mon. n. 38.
Flowers beaped, corollas ovate-oblong, style included.
67. *Erica Sparrmanni*.
Lin. syft. 369. *suppl.* 219. *Ait. holm.* 1778. p. 24.
t. 2. *Thunb. mon.* n. 34.
Leaves imbricate ciliate, heads four-flowered, corollas tubular strigose-hispid, anthers subincluded.
68. *Erica concinna*. Flesh-coloured Heath.
Ait. hort. kew. 2. 23.
Leaves in sixes or thereabouts smooth, flowers terminating umbelled, corollas cylindric attenuated at the base.
69. *Erica Massoni*. Tall downy Heath.
Lin. syft. 369. *suppl.* 221. *Thunb. mon.* n. 35.
Leaves in eight rows imbricate pubescent, flowers capitate, corollas cylindric fig-shaped.
- **** *Anthers awnless standing out, leaves in threes.*
70. *Erica Plukenetii*. Smooth-twigged Pencil-flowered Heath.
Lin. spec. 504. *syft.* 369. *Reich.* 2. 185. *Pluk.*
mant. t. 344. f. 3. *Seba mus.* 2. t. 25. f. 5.
Thunb. mon. n. 22.
Calyxes simple, corollas cylindric, anthers very long, style standing out.
71. *Erica Petiveri*. Downy-twigged Pencil-flowered Heath.
Lin. syft. 369. *Reich.* 2. 185. *mant.* 235. *Thunb.*
mon. n. 21.
E. Plukenetii. *Berg. cap.* 91.
Calyxes imbricate, corollas acute, anthers very long, style standing out.
72. *Erica nudiflora*.
Lin. syft. 369. *Reich.* 2. 186. *mant.* 229. *Smith*
ic. ined. 3. t. 57.
Branches tomentose, corollas cylindric scattered.
73. *Erica Bruniades*.
Lin. spec. 504. *syft.* 369. *Reich.* 2. 186. *Petiv.*
gaz. t. 2. f. 9. *Pluk. mant.* t. 347. f. 9. *Seba*
mus. 2. 64. t. 63. f. 7.
Flowers scattered, corollas covered by a woolly calyx, style standing out.
74. *Erica imbricata*.
Lin. spec. 503. *syft.* 369. *Reich.* 2. 186. *Thunb.*
mon. n. 11.
E. quinquangularis. *Berg. cap.* 372.
Corollas bell-shaped, covered with the imbricate calyx, style standing out.
75. *Erica umbellata*.
Lin. spec. 501. *syft.* 369. *Reich.* 2. 187. *Loefl.*
itin. 138. *Thunb. mon.* n. 6.
Leaves acrosc, corollas bell-shaped, style standing out.

Leaves in fours or more.

76. *Erica purpurascens*.
Lin. spec. 503. *syft.* 370. *Reich.* 2. 187. *Segu.*
ver. 280. *Thunb. mon.* n. 44.
E. procumbens dilute purpurea. *Bauh. pin.* 486.
Raii hist. 1715.
E. coris folio 7. *Clus. hist.* 1. 43.—fl. purp. dilu-
tioris coloris. *Bauh. hist.* 1. 358.
Flowers scattered, corollas bell-shaped, style standing out.
77. *Erica vagans*. Wandering Heath.
Lin. syft. 370. *Reich.* 2. 187. *mant.* 230. *Engl.*
bot. t. 3. *Thunb. mon.* n. 45. (see n. 80. which is
the same.)
Flowers solitary, corollas bell-shaped, style standing out.]
78. *Erica herbacea*. Early-flowering dwarf Heath.
Lin. spec. 501. *syft.* 370. *Reich.* 2. 188. *Hall.*
belv. n. 1013. *Curt. magaz.* t. 11. *Krock. files.*
n. 599. *Thunb. mon.* n. 43.
E. carnea. *Lin. spec.* 504. *Jacqu austr.* 1. 21. t. 32.
Scop. carn. n. 461.
E. procumbens herbacea—&, ternis fol. carnea.
Bauh. pin. 486. *Raii hist.* 1716. n. 13, 14.
E. coris folio 8, 9. *Clus. hist.* 1. 44.
E. supina herbacea, & carnea. *Park. theat.* 1484.
n. 2, 3.
E. cruciata. *Ger. emac.* 1381. f. 5.—&, *coris folio*
9 *Clusii.* 1385. f. 15.
Flowers directed all one way, corollas oblong, style standing out.
- [79. *Erica multiflora*. Many-flowered Heath.
Lin. spec. 503. *syft.* 370. *Reich.* 2. 188. *Thunb.*
mon. n. 42.
E. fol. corios multiflora. *Bauh. hist.* 1. 356. *Raii*
hist. 1714. n. 7.
E. coris folio altera. *Clus. hist.* 1. 42. n. 2.
E. juniperifolia dense fruticans narbonensis. *Lob.*
obs. 620. *Garid. aix.* 160. t. 32. (good).
Leaves in fives, flowers scattered, corollas cylindric, style standing out.
80. *Erica didyma*. Double-anthered Heath.
Wither. arr. 400.
E. multiflora. *Huds. angl.* 166.
E. fol. corios multiflora. *Raii syn.* 471.—humilior.
Raii hist. 1714. sub. n. 7.
Leaves in fives, peduncles scattered longer than the flower, corollas bell-shaped, anthers twin, style standing out.
81. *Erica mediterranea*. Mediterranean Heath.
Lin. syft. 370. *Reich.* 2. 189. *mant.* 229. *Thunb.*
mon. n. 41.
E. maxima purpurascens, longioribus foliis. *Bauh.*
pin. 485.
E. fol. corios quaternis, flore purpurascence. *Bauh.*
hist. 1. 356.
E. coris fol. 2. *Clus. hist.* 1. 42. (Murray, see n. 79.)
—maxima purpurascens. *Park. theat.* 1481. 2.
Raii hist. 1714.
E. major fl. purpureo. *Ger. emac.* 1381. f. 4.
Leaves spreading, flowers scattered, corollas ovate, style standing out.
82. *Erica grandiflora*. Great-flowered Heath.
Lin. syft. 470. *suppl.* 223. *Hort. kew.* 2. 25. *Curt.*
magaz. 189. *Thunb. mon.* n. 28.
Leaves in sixes or thereabouts acrosc smooth, flowers axillary peduncled, corollas cylindric subincurved smooth, style elongated.
- Place uncertain.
83. *Erica tetragona*.
Lin. syft. 470. *suppl.* 223.
Leaves in threes, flowers in racemes pointing all the same way, calyx linear, corolla four-cornered oblong, style included.
84. *Erica pyramidalis*. Pyramidal Heath.
Ait. hort. kew. 3. 491.
Anthers awnless included, corollas funnel-shaped in fours, style a little protruded, leaves in fours pubescent.

DESCRIPTIONS, &c.

Heaths are small shrubs, or what are commonly called undershrubs (Suffrutesces). Their leaves are very small, linear, lanceolate, or ovate, imbricate

or remote, entire, ciliate or ferrate, in some opposite, in most whorled, in others again scattered. Bractes usually three, two of which are opposite. The flowers are either axillary or terminating, and variously disposed. Corolla mostly of a purple colour. Anthers commonly oblong, but sometimes linear. Germ in most species smooth.

In some species the anthers are awned, in others crested, in others awnless; in some they are included within the corolla, in others they are projected, or stand out beyond the corolla. Hence this unwieldy genus is commodiously divided into four sections; and these are subdivided into subordinate sections from the disposition of the leaves. The inclusion or projection of the style also affords another division of the species. The calyx in some is double. And lastly the form of the corolla assists us much in distinguishing the numerous species. The campanulate and ovate forms, with their several modifications, are the predominating ones. All this may best be understood by the following table, which may be of considerable use, by exhibiting these material differences at one view.

- Anthers awned, from 1 to 29.
 — crested, — 30 to 43.
 — awnless, — 44 to 82. 84.
 Anthers included, from 1 to 69. 84.
 — standing out, — 70 to 80.
 Leaves in pairs opposite, 1. 2. 44. 45.
 — in threes, from 3 to 19; from 30 to 38;
 from 46 to 55; from 70 to 75; 83.
 — in fours, from 20 to 28; from 39 to 43;
 from 56 to 67; from 76 to 78; 81. 84.
 — more than four, 29, 68, 69, 79, 80, 82.
 Style included, from 2 to 7; from 9 to 14; 20, 21;
 23 to 25; 29 to 35; 39; 44; 56 to 58; 60 to
 66; 83.
 — middling, 42, 43.
 — standing out, 1; from 15 to 19; 22; 26 to
 28; 36 to 38; 45; 47 to 52; 54, 55, 59, 70,
 71; 73 to 82. 84.
 Corolla,
 Bell-shaped, 1; 9 to 18; 21, 22, 37, 45, 47, 55,
 62, 64; 74 to 77; 80.
 Bell-salver-shaped, 49.
 Pitcher-bell-shaped, 43.
 Globular-bell-shaped, 30, 31.
 Globular, 20, 48, 65.
 Subglobular, 6, 50.
 Roundish, 53.
 Ovate, 2 to 4; 23, 24, 27; 32 to 36; 39 to 41;
 46, 54, 81.
 Ovate-bell-shaped, 51.
 Ovate-conical, 7, 8.
 Ovate-oblong, 42, 66.
 Ovate-fig-shaped, 52.
 Ovate-funnel-shaped, 63.
 Funnel-shaped, 84.
 Oblong, 5, 28, 78.
 Cylindric, 19, 38, 59, 68, 70, 71, 72, 79, 82.
 Cylindric-fig-shaped, 69.
 Fig-shaped, 25, 26, 29. (I know not any other
 sense of the word *Grossus* but this.)
 Club-fig-shaped, 56, 57, 58, 60.
 Salver-shaped, 61.
 Tubular, 67.
 Four-cornered, 83.

This genus has within the compass of a few years risen from neglect to splendour. Every one remembers that Mr. Pope marks it with contempt, at the same time that he celebrates the colour of the flowers:

“E’en the wild Heath displays its purple dyes.”

Mr. Miller, so late as the year 1768, makes mention of no more than five sorts, four of which, as being wild, he consigns to oblivion; the fifth (n. 17.) is an inhabitant of the south of Europe; but he has not one of those beautiful natives of the Cape of Good Hope, which now form so great an ornament to our green-houses or dry stoves. In Linneus’s species plantarum (1762) we have thirty-

eight sorts; in Dahlgren’s dissertation, 1770, there are fifty-eight; which are increased to seventy-four in Murray’s edition of *systema vegetabilium* (1784.) From Bergius, the supplement, &c. and to ninety-one in Thunberg’s dissertation on this genus, published the year following. Our list, by the assistance principally of the *hortus kewensis*, contains eighty-three species.

Our first acquaintance with the African Heaths is from Hermann and Oldenland towards the end of the last century. The latter of these authors enumerates twenty-six species.

Ray in his history (1688) enumerates fifteen sorts, which are chiefly our wild ones, and those from the south of Europe; he has only one African in this list: in his *Dendrologia*, however, (1704) he has a long catalogue of fifty-six African Heaths, from Petiver and Plukenet, but chiefly from Sherard. This is a mere enumeration of names; and Heaths continued to be little known, except from the dried specimens in the herbariums of the curious, till some of the European species were imported into our gardens between the years 1763 and 1770; and the rich harvest of Africans were introduced from the Cape of Good Hope, by Mr. Francis Masson, who made two voyages to that spot, so abundant in rare plants, by the command and at the expense of the King of Great Britain; first in the years 1773, 1774 and 1775; and again in the years 1786 and 1787. Since these two periods, no genus of plants has attracted more regard than that which is now to be described.

1. Common Heath is a foot or two in height, or more; the stems brown and woody, very much branched; the branches in opposite pairs, mostly upright, round, downy and reddish; the branchlets square. Leaves nearly ovate, bluntish, with a whitish furrow, slightly hairy at the edge; according to Lightfoot tetragonal, in four imbricate rows, the uppermost having angles at the base like the barbs of an arrow. Flowers solitary, on peduncles the length of the leaves, from the sides of the branches, slightly nodding, opposite, but generally pointing one way, giving the branches the appearance of long bunches, but leafy shoots will be always found at the end. There is a small bract at the base of each peduncle; and two (sometimes three), roundish-sagittate concave bractes, woolly about the edge, at the base of the flower, of the same shape as those of the outer calyx. This is very short, composed of four (or five) leaflets, often tinged with red, fringed at the edge with soft hairs; the two outer leaflets somewhat larger, ovate, slightly keeled, the two inner roundish-ovate, somewhat membranaceous. The inner or proper calyx consists also of four oval-oblong, concave leaflets, slightly adhering at the base, alternating with the segments of the corolla, of the same colour, and nearly of the same texture with them, five times as long as the outer calyx, open, but after flowering approaching, with the points bent in. We may here observe a curious instance of the gradual transition from the green herbaceous leaves of the stem, to the more delicate texture of the corolla; which is of a pale purplish rose-colour, whitish towards the base, divided two-thirds of the way down into four (sometimes five) ovate, blunt, equal, open segments. Filaments awl-shaped, double to and fro towards the point, white, or tinged with purple, springing from small glands at the base of the germ. Anthers reddish-brown or orange-coloured, lanceolate, having two cells opening at the sides; horns awl-shaped, white, appearing woolly when magnified, sometimes cloven, pointing downwards, nearly half as long as the anther; pollen white. Germ orbicular, but thick in proportion to its breadth, reddish, with eight perpendicular ridges beset with soft white hairs: style slanting upwards, white, purplish above, longer than the calyx: stigma purplish red. Capsule small, involved in the permanent flower, globular, slightly depressed, partitions simple, fastened

* Stokes in With, Wither, Curt, Lightf.

to the axis of the capsule, and opposite to the futures of the valves: receptacle globular, fleshy, four-lobed, in the upper part of the capsule. Seeds six to nine in each cell, subovate, scrobiculate-wrinkled, pale yellow^b.

It varies with white flowers, and with hoary leaves. The latter has been considered by some as a distinct species, and by others confounded with *E. ciliaris*. It is frequent on Bagshot heath, Enville common in Staffordshire, Birmingham heath, and as Ray says, not only about Windsor, where Clusius observed it, but all over England.

This plant, which is little regarded in warmer climates, is made subservient to a great variety of purposes in the bleak and barren highlands of Scotland, and other northern countries. The poorer inhabitants cover their cabins with it instead of thatch, or else twist it into ropes, and bind down the thatch with them in a kind of lattice work. They also make the walls with alternate layers of heath, and a sort of cement made of black earth and straw. The hardy Highlanders frequently make their beds with it. In most of the Western isles they dye their yarn of a yellow colour, by boiling it in water with the green tops and flowers of this plant: and woollen cloth boiled in alum water, and afterwards in a strong decoction of the tops, comes out a fine orange-colour. In some of these islands they tan their leather in a strong decoction of it. Formerly the young tops are said to have been used alone to brew a kind of ale; and Boethius relates that this liquor was much used by the Picts. In some of the isles it is said they still brew ale with one part malt, and two parts of the young tops of heath, sometimes adding hops. In many parts of Great Britain besoms are made of it. The turf, with the heath growing on it, is cut up and dried for the fuel of the cottager, for heating ovens, covering under-ground drains, &c.

Sheep and goats will sometimes eat the tender shoots, but they are not fond of them. Cattle not accustomed to browse on heath give bloody milk, but are soon cured by drinking plentifully of water. The branches of heath afford shelter, and the seeds a principal part of the food of many birds, especially those of the Grouse kind: and for this purpose the seed-vessel is formed and protected in such a manner, that the seeds are preserved a whole year, or even longer. Bees collect largely from the flowers, and honey made from them was anciently supposed to be of a bad quality, but in fact it is only of a darker colour. The foliage affords nourishment to the *Phalæna quercus*, or great egger Moth. Dodder frequently entwines itself about this plant, and gives it a singular appearance^c.

Almost every part of Europe abounds with heath, especially the northern countries; it is also common in all the temperate parts of the vast Russian empire.

Heath is called *Ling* in some parts of England, in Shropshire *Grig*, in Scotland *Hather*. It is remarkable that Shakspeare enumerates Heath and *Ling* as different plants. The former of these names is from the German *Heide*, and the latter from the Danish *Lyng*: in Swedish it is *Liung*; in Italian *Erica*; in Spanish *Brezó*; in Portuguese *Urze*, *Erica*, *Torga* or *Estorga*; in Russian *Weresk*.

2. The stem is subdivided into narrow branches. Leaves pressed close, almost imbricate. Calyx lanceolate, rounded, yellowish, not more than half the length of the corolla, close. Corolla ovate-oblong, subrostrated, yellow. Anthers and style included. Stigma truncated, four-cornered, echinate^d.

It is thus described by Thunberg. The whole is smooth, with a rufescent upright stem, two feet high. Branches scattered, from erect, spreading, wand-like; branchlets also scattered, filiform, very frequent, wand-like, short. Leaves opposite, blunt, grooved underneath, a line in length. Flowers on

the extreme branchlets, one, two or three together, upright. Bractes linear, obtuse, concave, pale. Calycine leaflets ovate, acuminate, keeled below the tip. It varies with the corolla, calyx and bractes yellow or white. The whole plant being covered with its shining golden or silvery flowers, is very beautiful.

Native of the Cape of Good Hope, where it was observed by Bergius; and thence introduced here by Mr. Francis Masson, in 1774^e.

3. This is a lofty shrub with purplish branches; the branchlets subtomentose and white. Leaves crowded very much, even, rugged about the edge. Peduncles shorter than the leaves. Corolla purplish, smooth, distinct from all others in its flowers being the size of an acorn^f.

Thunberg thus describes it. Stem smooth, rugged, brown, flexuose, decumbent, strict, a span high. Branches alternate, divaricate, like the stem. Leaves in threes, lanceolate, acute, smooth, flat above, convex beneath, with a slender groove, spreading. Peduncles tomentose, reflex. Bractes ovate, acute, approximating, many times smaller than the calyx. Calycine leaflets ovate, acute, keeled, entire, pressed close, smooth, pale, two lines in length. Corolla acute, pale flesh-colour; the segments straight, acute, converging; the largest of all the *Ericas*.

Native of the Cape of Good Hope. Introduced here about 1780. It flowers in May and June^g.

4. Stem shrubby, determinately branched, branches rushy. Leaves linear-subulate, acuminate, even, patulous. Racemes pointing one way, nodding, on peduncles the length of the flower, flesh-coloured: bractes remote, minute, coloured. Calyx red, lanceolate, very small. Corolla ovate-globular, red, with a blunt mouth. Anthers a little shorter than the corolla. Style included, the length of the corolla. Stigma subcapitate^h. The branch continues the spikeⁱ. Native of the Cape of Good Hope.

5. According to Thunberg, the stem is erect, pubescent, leafless, two feet high. Branches scattered, frequent, spreading, covered with leaves, very short, simple. Leaves in threes, ovate, obtuse, convex beneath, with a longitudinal groove, flat above, entire, imbricate, smooth, scarcely a line in length. Flowers solitary, nodding, on pubescent reflex peduncles. Bractes ovate, keeled, acute, white, a little shorter than the calyx, on the middle of the peduncle. Calycine leaflets ovate, acute, concave, keeled, white, smooth, almost three times shorter than the corolla, which is almost an inch long, divided at the mouth into four very short blunt segments. It resembles n. 3. but has ovate, not linear leaves, corollas less, deeply divided, and not so much inflated, the flowers more copious, and the stem erect.— This is one of the most beautiful of this beautiful genus, with large white flowers. Thunberg found it in the interior part of Africa^k. It was introduced here in 1787, by Mr. Francis Masson^l.

6. Stem frutescent, determinately branched, with white, awl-shaped, decurrent lines under the scars of the leaves; which are linear, even, pressed close, scarcely longer than the interstices. Flowers terminating, subumbelled, on peduncles the length of the flowers: bractes linear, minute, remote. Calyx scarious, mucose, a little shorter than the corolla, ovate, acute. Corolla blunt. Anthers ovate, short. Style short, cylindrical. Stigma naked.

Native of the Cape of Good Hope^m. Introduced in 1787, by Mr. Francis Massonⁿ.

7. Thunberg describes the stem as flexuose-erect, ash-coloured, two feet high. Branches opposite, or in threes, cinereous-villose, wand-like. Branchlets filiform, scattered, frequent, wand-like. Leaves in threes, linear-lanceolate, beneath grooved from the revolute margins, tomentose-whitish, from erect spreading, curved a little. Peduncle, calyx, and corolla hirsute. Calyx shorter by half than the co-

^b Gærtner.

^c Penn. tour, Wither. Curtis, Lightf.

^d Linn. mant.

^e Hort. kew.

^f Linn. mant.

^g Hort. kew.

^h Linn. spec.

ⁱ Linn. syst.

^m Linn. mant.

^k Hort. kew.

^l Linn. suppl.

ⁿ Hort. kew.

rolla, which is flesh-coloured, oblong, subcampanulate, and a line in length. It varies with flowers very hirsute and hairy, red, and whitish flesh-colour.

Native of the Cape of Good Hope. Introduced about 1778 by Mr. James Gordon. It flowers in may and june^a.

8. Native also of the Cape. Introduced in 1773 by Mr. Francis Masson, and flowering in may and june^b.

9. This shrub is about two feet high, and pubescent. Leaves linear, subciliate, erect. Flowers at the ends of the branchlets, subsolitary, on very short peduncles. Calyx lanceolate, acute, one third of the length of the corolla, spreading or reflex. Corolla shaped like that of Lily of the valley, purple, blunt. Stamens shorter than the corolla. Pistil the length of the corolla. Stigma subcapitate.

Found at the Cape by Bergius. ^a It is covered with beautiful flowers.

10. Stems procumbent, copious; a palm in length. Leaves lanceolate, bluntish, even, keeled. Flowers scattered, solitary. Calyx scarious, lanceolate, acute, shorter by half than the corolla; which is obtuse, red and even. Anthers very short. Stigma blunt. Native of the Cape^c.

11. The whole shrub is smooth, purple, erect, a foot high and more. Branches and branchlets trichotomous, from erect spreading, subfastigiate. Leaves in fours, obliquely whorled, three equal in situation, the fourth lower, linear, obtuse, flat above, beneath convex, with a deep longitudinal groove, the lower smooth, the uppermost very finely ciliate, attenuated into paler petioles, imbricate. Flowers terminating, four to ten, drooping. Peduncles blood-red, longer than the leaves. Calycine leaflets boat-shaped, acute, pale blood-red, smooth, ciliate at the tip, pressed close, a little shorter than the corolla; which is blood-red and smooth. The above is Thunberg's description.

Corolla globular-bell-shaped^d. Native of the Cape.

12. Leaves, according to Thunberg, lanceolate, smooth. Flowers in racemes, directed all the same way. Corolla purple.

This varies, with leaves in fours^e. Native of Portugal.

13. Native of the Cape of Good Hope. *E. urceolaris* of Bergius, which in syst. veget. is referred to this species, is n. 7.

14. Leaves subtriquetrous, smooth, short, patulous. Bractes three, having the appearance of a calyx. Flowers terminating, white. Anthers convex, blunt, black^f.

Thunberg thus describes it. Stem brown, upright, a foot high and more. Branches and branchlets scattered and whorled, flexuose-erect, wand-like, ash-coloured, tomentose. Leaves linear-ovate, obtuse, very finely rugged about the edge, flat above, convex beneath, with a slender longitudinal groove, shining, pressed close at the base, spreading and recurved from the middle, a line in length. Flowers terminating, in threes, peduncled, erect. Bractes oblong, acute, keeled, white, approximating to the calyx, imbricate, shaped like the calycine leaflets, which are ovate, acute, keeled, very finely rugged about the edge, white, smooth, nearly equal to the corolla.

15. Branches filiform, creeping. Flowers violet-coloured. Leaves ovate, acute, ciliate^g. These are both natives of the Cape.

16. This is a shrub growing to the height of several feet. The leaves quickly fall off. With the branches of it they make besoms, whence the trivial name^h. It is common in the South of Europe, was introduced here about 1770, and flowers in april and mayⁱ.

17. This is an upright shrub, growing to the height of six feet, with upright branches covered

with a white nap. Leaves very abundant, upright, smooth, almost awl-shaped, covering the branches, wrinkled when dry. Flowers very numerous, on the middle of the branches, so that the later leaves are above them; they are on branching peduncles, forming a panicle. Calyx single, short, with lanceolate leaflets. Corolla white, short, broad, four-cleft two thirds of the way^j.

Native of the South of Europe, and the island of Madeira. Introduced here about 1748. It flowers from february to may^k.

Mr. Miller makes it a native of the Cape of Good Hope and Portugal, but most of the little he has said on this genus is wrong. He sets down *E. herbacea* and *ciliaris* as natives of England; and he gives no description of any except of this, and that is imperfect and erroneous.

18. This is an upright shrub, with the branches growing by threes. Leaves triquetrous, even, pressed close. Flowers in a panicle, nodding, alternate, white, on white pubescent peduncles; with ovate, alternate, white bractes. Leaflets of the calyx ovate, keeled, sharpish, the length of the tube. Corolla double the length of the calyx, broad, sharp; almost like that of *E. cubica*. Anthers black, two-parted, above the throat. Style purpurascens, rather longer than the corolla: stigma blunt. Found at the Cape of Good Hope by Thunberg^l.

19. Branches round, smooth: branchlets pubescent. Leaves linear-awl-shaped, grooved, spreading, half an inch long, on appressed petioles scarcely half a line in length. Flowers axillary. Peduncles hardly half an inch long, sometimes bifid or trifid. Bractes three, awl-shaped, three-sided. Leaflets of the calyx keeled, smooth, two lines in length. Corolla deep crimson, an inch long, a little bent in, smooth, subpellucid, a little swelling at top, with a four-cleft mouth; segments broad, sharpish, sub-erect. Filaments whitish. Anthers included, oblong, brown, bifid; awns subulate-capillary, the length of the anthers. Style a little longer than the corolla, red. Stigma standing out, incrassated, very dark purple. Found by Mr. Francis Masson at the Cape of Good Hope; and introduced in 1774. It flowers at various seasons^m.

20. Branches filiform, ramentaceous, long, ferruginous. Leaves very narrow, upright, pressed close. Flowers umbelled. Calyx shorter than the corolla, green. Corolla purple. Anthers with two ciliate horns, inwardly mucronate, opening in an ovate form on the sides. Style purple. Stigma double, the upper roundish, the lower quadrid. Native of the Cape of Good Hopeⁿ. Introduced in 1786, by Mr. Francis Masson. It flowers in july^o.

21. Stem shrubby, smoothish, with pubescent branches. Leaves linear, obtuse, erect, channelled underneath, the length of the joints, hispid or subscabrous. Flowers umbelled, dispersed on the upper twigs. Calyx extremely minute, if observed, closely ciliate. Corolla obtuse. Anthers two-awned at the base, included. Style the length of the corolla. Stigma headed. Native of the Cape^p. Introduced in 1774, by Mr. Francis Masson. It flowers from february to may^q.

22. Branches somewhat villose. Leaves linear, acute, spreading, somewhat villose, ciliate, with a few long hairs, glandulous at the tip, three lines long, on petioles half a line in length. Flowers axillary on the extreme twigs, on peduncles a line and half long. Bractes three, linear, minute, caducous. Calycine leaflets lanceolate, villose, pressed close, a line in length. Corolla pale red, almost twice as long as the calyx; tube a little ventricose; segments of the border obtuse, erect. Filaments white, a little shorter than the calyx. Anthers included, oblong, blackish, two-parted: awns awl-shaped, short, a little divaricating. Style a little longer than the corolla, greenish. Stigma thickened,

^a Hort. kew.

^b Ibid.

^c Linn. mant.

^d Ibid.

^e Linn. syst.

^f Linn. syst.

^g Hort. kew.

^h Linn. mant.

ⁱ Ibid.

^j Ibid. & Villars.

^k Haller.

^l Hort. kew.

^m Linn. suppl.

ⁿ Hort. kew.

^o Linn. mant.

^p Hort. kew.

^q Linn. mant.

^r Hort. kew.

convex, black-purple. Found at the Cape by Mr. Francis Maffon. Introduced in 1775. It flowers in march and april¹.

23. Stems shrubby, from nine to twelve inches high, branched, brown, somewhat rugged from the remains of the leaves which have fallen off: branches a little woolly. Leaves commonly in fours, but sometimes in fives, ovate-linear, spreading, near the flowers pressed close to the stem, the edges turned in and ciliated, each hair terminating in a small round gland; the upper surface is flat, the lower concave and white. Flowers hanging down one over another all one way, forming a little head. Peduncles downy, about the length of the flowers. Bractes three at the base of each flower on the upper side, of the same shape as the leaves of the calyx, the lowermost the largest, inserted about a line below the calyx; the two others, one on each side rising from the base of the calyx. Calycine leaflets from four to six, linear, three times shorter than the corolla, woolly, fringed with long hairs tipped with brownish red globules. Corolla pale purple or flesh-colour, varying to white; divided into four very shallow segments, which turn back. Anthers sagittate, purple, with two white horns at the base, and two little apertures for the discharge of the pollen. Germ woolly, glandular at the base. Capsule villose, truncate.

It flowers twice in the year. Native of the northern parts of Europe, on moist heaths and moorish grounds; flowering in july and august; Linneus says, twice in the year.

This species is not inferior to many of the foreign heaths in the beauty and delicacy of its flowers. It is distinguished from the other British heaths, not only by the flowers growing in a kind of pendulous cluster on the tops of the stalks, but by the leaves growing in fours, and forming a sort of cross; whence the trivial and English names. Our old writers call it Low Dutch Heath or Besome Heath².

24. Thunberg thus describes it. Stem ash-coloured, hispid, flexuose, erect, two feet high and more. Branches scattered, seldom in whorls, like the stem; branchlets filiform and capillary, short, wand-like. Leaves in threes or fours, frequently four on the branches, and three on the branchlets, seldom all in fours, linear, obtuse, rugged, villose, incurved, grooved beneath, spreading, a line in length. Flowers at the end of the branchlets, umbelled, two, three, or more together, abundant, blood-red, hirsute. Peduncles capillary, bracted. Calycine leaflets lanceolate, rufescent, hairy, very short. Corolla obtuse, villose.

This has its name from the pubescency of the flowers.

β. Leaves linear, incurved, hispid. Flowers among the leaves terminating, converging, shorter than the leaves.

According to Thunberg this varies much in the stem, branches, leaves and flowers. The principal varieties are these:—1. Hairy, with leaves in threes, and the corollas very finely hairy. 2. Hispid, with leaves in threes, and hispid. 3. Villose, with leaves in fours, rugged, and the branches in whorls. 4. Small-flowered, with the leaves on the branches in fours, on the branchlets in threes, hispid, corollas minute.

Native of the Cape of Good Hope¹.

25. Stem ash-coloured, rugged, erect, a foot high and more. Branches and branchlets in a sort of whorl, from erect-spreading. Leaves in fours, lanceolate-subulate, grooved underneath, smooth, imbricate. Flowers at the ends of the branches in racemes, nodding. Peduncles blood-red, villose, the length of the leaves. Bractes below the middle of the peduncle, ovate, acute, ciliate, keeled, pale. Calycine leaflets broad-ovate, acute, keeled, very finely subciliate, smooth, blood-red. Corolla cylindric, subventricose below the tip, a little curved,

obtuse, smooth, blood-red, half an inch long. Corollas, according to Linneus, twice as long as the leaves².

Native of the Cape. Introduced in 1774, by Mr. Francis Maffon. It flowers in june and july³.

26. Stem somewhat rigid, with white awl-shaped decurrent lines from the scars left by the fallen leaves. Leaves awl-shaped, crowded, somewhat rugged on the edge. Flowers in a sort of head, on very short purple peduncles, with very small remote bractes. Calyx blood-red, ovate, very short. Corolla ovate-cylindric, blood-red, very long, with a blunt mouth. Anthers a little shorter than the corolla, two-parted. Stigma turbinate-headed, four-cornered. Thunberg says it differs from the preceding, in having the calyx linear, the corollas more inflated, the flowers in umbels, and the leaves in fixes. Native of the Cape⁴.

27. This is the size of Juniper⁵. Native of the Cape.

28. This is a brown rugged shrub, determinately branched, somewhat rigid, having the appearance of a small Pinus sylvestris. Leaves crowded very much together, linear, acute, deep green. Spike terminating, surrounded by sessile, imbricate, broadish flowers. Corollas longer than the leaves, obtuse, commonly drooping. Stamens not standing out; but the stigma is so a little. Native of the Cape⁶.

29. Stem shrubby, upright, compound, two feet high. Leaves crowded, scattered, almost filiform, an inch long, even, capillary at the base, from erect spreading a little, glandular near the tip. Flowers terminating, fastigiate. Calyx shorter, four-parted, linear, erect. Corolla cylindric, purple, with a four-cleft, yellow, upright mouth. Anthers the length of the corolla. Style the length of the stamens. Native of the Cape; observed there by Bäck⁷.

30. Stem, according to Thunberg, brown, smooth below, hispid at top, erect, a foot high. Branches dichotomous, brown at bottom, and smooth, above ash-coloured, hirsute, erect, fastigiate: branchlets scattered all over the branches, filiform, frequent, hairy-rough, wand-like. Leaves linear-subulate, entire, smooth, flat above, convex beneath, with a very slender groove, incurved, from erect spreading. Flowers solitary, or two or three together, on very short drooping peduncles, ash-coloured, tomentose. Bractes lanceolate, smooth, white, shaped like the leaflets of the calyx; which are broad-ovate, acuminate, concave, keeled, membranaceous on the edge, entire, from erect, spreading, smooth, white, equal to the corolla; which is smooth, white, the size of a pepper-corn.—Branches and peduncles tomentose. Corolla the length of the calyx⁸.

Native of the Cape. Introduced in 1787, by Mr. Francis Maffon⁹.

31. Stem erect, branched. Leaves linear, bluntish, rugged on the edge, longer than the internodes, on white petioles. Flowers terminating, in threes or thereabouts, nodding, the size of a pea, on purple peduncles, with alternate, remote, flesh-coloured bractes. Calyx flesh-coloured, lanceolate, the length of the corolla, keeled, bent in. Corolla obtuse, red. Anthers awnless, very short, yellowish. Style cylindric, short. Stigma headed. Native of the Cape¹⁰. Introduced in 1774, by Mr. Francis Maffon. It flowers in april and may¹¹.

32. Thunberg describes his gnaphalodes thus. It is a small shrub, smooth all over, of a cinereous brown colour, erect, a span high. Branches and branchlets dichotomous and trichotomous, filiform, from erect spreading, fastigiate. Leaves ovate, entire, smooth, flat above, convex beneath, with a longitudinal groove, pressed close, the length of the internodes, forming as it were jointed branchlets, a line and half in length. Flowers terminating, about three together, purple. Bractes approximating to the calyx, boat-shaped, purple, very finely ciliate.

¹ Hort. kew.

² Curtis, Wither, Stokes in Wither.
³ Linn. spec.

⁴ Linn. syst.
⁵ Linn. syst.

⁶ Hort. kew.
⁷ Linn. suppl.
⁸ Hort. kew.
⁹ Hort. kew.

¹⁰ Linn. mant.
¹¹ Ibid.
¹² Linn. mant.

Calyxine leaflets boat-shaped, pressed close, purple, the length of the corolla; which is bell-shaped and smooth. Native of the Cape of Good Hope.

33. Stem shrubby, compound. Leaves linear, smooth. Flowers terminating, sessile. Bractes on each peduncle three, alternate, ovate, purple; the size and appearance of a calyxine leaflet. Calyx spreading, with ovate, purple leaflets. Corolla purple. Stigma headed. Native of the Cape^y. Introduced in 1774, by Mr. Francis Masson. It flowers in august^z.

34. This is a shrub with linear, appressed, smooth leaves, the length of the internodes. Flowers racemed, peduncled. Bractes solitary, or in pairs, having the appearance and colour of the calyx; which is ovate, even, and flesh-coloured. Corolla bell-shaped, white. Stamens shorter than the corolla. Anthers brown, two-parted. Style dark purple. Stigma becoming blue at the tip. Native of the Cape^a.

35. Calyx and bracte white. Corolla yellow^b.—Leaves three-sided. Bractes alternate. Calyx blunt^c. The calycina of Thunberg is the same with the vespertina of Linneus, n. 18. Native of the Cape.

36. Root perennial, woody. Stems shrubby, about a foot high, with opposite branches; the bark ash-coloured. Leaves linear, fleshy, spreading; above smooth and shining, transversely wrinkled, towards the end beset with a few scattered hair-like points; beneath having a longitudinal furrow, which is white from a woolliness apparent to the magnifier; the edge somewhat membranaceous, and when viewed with the microscope appearing ferrulate: the leaves, when young, have three flat sides, but when full grown are nearly flat. Flowers in long clustered whorled terminating spikes, sonorous when struck; they come out from the sides of the young shoots; those from the end-shoots are near each other, but scattered and bare; those from the small lateral branches generally in pairs. Peduncles shorter than the flowers, purplish brown, somewhat downy, the lower nodding, the upper upright; with a bracte about the middle. Bractes ovate, purplish, one close to the peduncle; and three, sometimes two only at the base of each flower, the largest half as long as the calyx. Leaflets of the calyx dark purple, with membranaceous, white, ferrulated edges, and a furrow along the upper half. Corolla three times as long as the calyx, bluish purple, shrivelling, and turning of a fawn-colour; the clefts very shallow. Filaments awl-shaped, ascending, doubled to and fro towards the point, white. Anthers blackish-purple, double; the horns crimson, half-ovate, the outer edge toothed, half the length of the anthers; apertures oval, oblique, extending nearly half way down the side. Germ cylindric, ribbed, smooth. Style crimson, inclining to one side. Stigma roundish. Seeds oval, the surface netted, and four times as big as those of *E. Tetralix*^d.

Dr. Stokes remarks, that the lower part of the trunk is free from hairiness, that the bark of the last year's shoot is ash-coloured, covered with a short light brown woolliness, and that the branches are mostly in threes. Mr. Curtis observes, that the style is inclosed within the corolla, but is longer than the stamens; and that it is distinguished from *E. Tetralix*, with which and the common Heath it grows promiscuously, by the fineness, smoothness, and deep green colour of its leaves; the flowers also grow more in spikes, and are of a deeper purple colour.

Native of Europe, but not in the south, nor in the extreme northern parts; also of the Levant. It flowers from june to august. It may be applied to the same purposes as the common Heath; and the flowers are much more showy.

^y Linn. spec. ^z Hort. kew. ^a Linn. mant.
^b Linn. spec. ^c Linn. syst.
^d Stokes in With. Curtis, With.

37. This is a shrub, with linear upright leaves, almost even. Flowers purple, very small, as are also the calyxes and peduncles; they are so abundant as to cover the whole plant. Native of the Cape of Good Hope^e. Introduced in 1774, by Mr. Francis Masson. It flowers from february to april^f.

38. This is an upright rigid shrub, with an ash-coloured bark. Leaves in threes or fours, linear, obtuse, somewhat rugged on the edge. Flowers terminating, two or three, subsessile. Calyx rude, acute, keeled, imbricate, with similar bractes. Corolla scarcely club-shaped, obtuse, three times as long as the calyx; the segments becoming hoary. Anthers included, bifid. Stigma capitate^g. Native of Spain and Portugal. Observed in the former by Alstroemer. Introduced in 1769, by George W. Earl of Coventry. It flowers in april and may^h.

39. Leaves patulous, broad-linear, keeled. Calyx ovate, smooth, coloured, one third of the length of the corolla, which is the size of a pea, and viscid. The flowers are at the ends of the branches in a sort of umbel. Native of the Cape of Good Hopeⁱ.

40. Stem, according to Thunberg, brown, rugged, a foot high. Branches in whorls, like the stem, flexuose-erect: branchlets trichotomous and dichotomous, like the branches. Leaves in sixes, oblong, obtuse, incurved, above three-cornered, flat, beneath grooved, rugged especially underneath, very finely ciliate, imbricate, a line in length. Petioles ciliate. Flowers aggregate, in whorls, in the middle and at the ends of the branchlets. Calyxine leaflets lanceolate, ciliate, blood-red. Corolla ovate-bell-shaped, hairy-rough at bottom, blood-red. Style purple, curved, twice as long as the corolla, with the headed stigma standing out. The leaves are scattered, like those of *Lycopodium* or Wolf's-claw Moss, in a sort of spiral, whence it is difficult to reckon their number^k. Introduced in 1774, by Mr. Francis Masson. It flowers in april and may^l.

41. Thus described by Thunberg. The whole smooth, brown, erect, a foot high. Branches scattered in threes, filiform, flexuose, erect. Leaves ovate, obtuse, ciliate, flat above, convex beneath, grooved, imbricate. Flowers terminating, drooping. Bractes like the leaflets of the calyx; only not so broad, ovate, acute, ciliate, concave, flesh-coloured. Corolla ovate-globular, flesh-coloured, smooth. Native of the Cape of Good Hope.

42. Stem frutescent, somewhat rugged, determinately branched. Leaves oblong-ovate, terminated by a little bristle, convex above, smooth, shining. Flowers terminating, corymbed, subsessile. Calyx red, lanceolate, with an awn at the end. Corolla long, inflated, viscid, with a globular throat, and a four-parted, acuminate, short border. Filaments linear, membranaceous. Anthers within the throat, oblong, acuminate, woolly at the base, scarcely crested, awnless. Germ oblong. Style filiform. Stigma obtuse, a little longer than the anthers. Found at the Cape by Thunberg^m.

43. Flowers terminating, four or eight from the uppermost axils. Peduncles filiform, shorter than the leaves. Bractes three, linear. Calyxine leaflets, from a broad base awl-shaped, keeled, even, a line and half in length. Corolla white: tube pitcher-shaped, a little longer than the calyx; segments of the border obtuse, patulous. Filaments white, shorter than the tube, bent in at the tip. Anthers ovate, compressed, brown, two-parted: laminae oblong, acute, gash-ferrate without, white, the length of the anthers. Germ red, having eight little knobs at top. Style the length of the corolla, whitish. Stigma headed, flat beneath, convex above, commonly four-lobed. Native of the Cape: where it was found by Mr. Francis Masson. It was introduced in 1775; and flowers in may and juneⁿ.

^e Linn. spec. ^f Hort. kew. ^g Linn. mant.
^h Hort. kew. ⁱ Linn. spec. & syst. ^k Linn. syst.
^l Hort. kew. ^m Linn. suppl. ⁿ Hort. kew.

44. According to Thunberg, the whole stem is smooth, erect, a span high. Branches and branchlets filiform and capillary, erect. Leaves opposite, lanceolate, smooth, convex beneath, with a slender groove, pressed close. Flowers terminating, umbelled, in threes. Calycine leaflets equalling the corolla, keeled. Flowers blood-red. Style included^a. Native of the Cape.

45. Flowers solitary, terminating, peduncled. Peduncles white-tomentose, generally longer than the flowers. Calyx bell-shaped, bluntish, four-parted, with ovate leaflets. Corolla twice as large as the calyx. Filaments the shortest of any. Germ white-tomentose. Stigma subcapitate. This has the herb of *Passerina Ericoides*, not to be distinguished from it, inasmuch that *Passerina Ericoides* has entirely the herb of an *Erica*, with the flowers of *Passerina*. Here we have an instance of the intermixture of genera, which is not uncommon in the Cape plants. Native of the Cape^b.

46. Stem frutescent, with determinate, wand-like branches. Leaves linear, three-sided, erect, even, longer than the internodes, sharpish. Flowers in a sort of spike, white, with lanceolate white bractes on the peduncle. Calyx scarious, white, ovate, acuminate, half the length of the corolla; which is white, with the belly hyaline, and the border four-parted, narrowed, acute, funnel-form. Anthers bifid, obtuse, short. Style shorter than the corolla. Stigma blunt. Native of the Cape^c.

Thunberg will have it, that this does not differ from *lutea*, n. 2. but that has opposite leaves; in this they are in threes.

47. A small shrub with narrow branchlets. Leaves ovate-oblong, three-sided, channelled. Flowers terminating, nodding, sessile. Calyxes globular, waved, imbricate, with roundish scales, keeled and bent in at the tip, blood-red. Corollas bell-shaped, yellowish, scarcely longer than the calyx. Style very long, nodding^d. Native of the Cape. Introduced in 1774 by Mr. Francis Masson^e.

48. Thunberg thus describes it. Stem seldom erect, commonly decumbent, smooth, flexuose, filiform. Branches filiform, flexuose, villose: branchlets capillary, frequent, tomentose. Leaves ovate, spreading, rough, with long hairs. Flowers at the ends of the extreme branchlets, peduncled, one, two or three together, the whole calyxes covered close with a white wool. Anthers protruded, purple. Style protruded, a little above the anthers.

Linneus, in his *Species plantarum*, says that this is known by its globular flowers, covered with a greenish yellow lanugo.—Corolla half-five-cleft, obtuse, not longer than the calyx. Anthers included^f. Native of the Cape. Introduced in 1774, by Mr. Francis Masson. It flowers from april to july^g.

49. Stem shrubby, flexile. Leaves linear, obtuse, even, patulous. Flowers terminating, subumbelled, scattered in close parcels, nodding a little. Peduncles the length of the corolla, purplish. Bractes lanceolate, alternate, coloured. Calyx blood-red, obovate, more in breadth than length, keeled, with a dagger-point at the tip. Corolla bell-falver-shaped, blood-red; tube the length of the calyx; border spreading, generally longer than the tube, the segments roundish-ovate. Anthers dark-coloured, bifid, the length of the border. Style twice as long as the corolla, bristle-shaped. Stigma blunt, slightly four-cornered. Native of the Cape^h.

50. Stem rufescent, round, seldom branched. Leaves linear, even, sessile, acute, generally pressed close. Flowers terminating, peduncled. Bractes two, alternate, scarious, lanceolate. Calyx even, with ovate, scarious, acute, yellow leaflets. Tube of the corolla subglobular; border four-parted, the length of the calyx, with ovate, acute, spreading segments. Anthers purple, bifid, standing up above the throat. Style longer than the stamens. Stigma simple, obtuse. Found at the Cape by Thunbergⁱ.

51. This shrub has the stature of Wormwood, and is panicled. Stem rufous; branches in threes. Leaves linear, gibbous on the outside, subhirsute. Flowers at the ends of the branchlets. Corollas pale. Anthers very dark purple, bifid, within the mouth of the corolla. Stigma purple, four-cleft. Native of the Cape^j.

Thunberg says it varies .1. With a wand-like stem, and branches and leaves very hirsute and rugged. 2. With a wand-like hirsute stem and branches, and wrinkled villose patulous leaves. 3. With a panicled stem, very short branchlets, and the leaves a little rugged and hirsute. 4. With a panicled stem, longer fastigiata branchlets, and the leaves a little rugged, and smooth.

52. This is a suffruticose plant, two feet high. Leaves spreading very much, sessile, ovate, acute, reflex and ciliate on the edge. Raceme terminating, whorled by threes. Corolla large, with a contracted unequal mouth^k. According to Thunberg, oblong, bell-shaped, white. Anthers purple. Style almost twice as long as the corolla.—Native of Spain and Portugal. Introduced about 1773. It flowers from july to september^l. Caspar Bauhin gives it the epithet of English; no one, however, has heard of its being found in our island, though Mr. Miller has fallen into Bauhin's error, and sets it down as one of our wild plants.

53. Stems decumbent, half a foot high, strigose or hairy. Leaves subsessile, horizontal, patulous, even. Flowers small, bell-shaped, bent towards the ground, scattered thinly. Style longer than the corolla. Thunberg says it much resembles the *planifolia*, but differs in having an erect shrubby stem, awnless anthers, the leaves scarcely ciliate, revolute, more approximating, the corollas globular and smooth.—Native of the Cape of Good Hope^m.

54. Stem round, flexuose, decumbent, rigid, smooth. Branches scattered, opposite, or by threes, almost erect, bent in, flexuose, tomentose at top. Leaves lanceolate, flat above, grooved beneath from the revolute margins, entire, smooth, spreading. Petioles semicylindric, the length of the leaves, equalling the internodes, pressed close, pale. Flowers terminating, umbelled, on very short tomentose peduncles. Bractes lanceolate, towards the base of the calyx. Calycine leaflets ovate, acute, entire, smooth, concave, keeled below the tip, pressed close. Corolla bell-shaped, pale, smooth. Native of the Cape. Introduced in 1774, by Mr. Francis Masson. It flowers from march to juneⁿ.

55. Stem erect, smooth, a foot high and more. Branches commonly in threes, pubescent, erect, wand-like: branchlets scattered, very frequent, filiform and capillary, pubescent, erect, leafy. Leaves three-cornered, obtuse, pressed close, smooth, with a very slender groove underneath. Flowers on very short peduncles, erect. This is distinguished by its white corolla, and awnless, projected, white anthers. Found at the Cape by Thunberg^o.

56. Leaves linear, even, the upper ones ciliate. Flowers terminating, solitary, sessile. Corollas purple, acuminate, pubescent, several times longer than the calyx, the segments lanceolate. Style scarcely projected. Native of the Cape^p.

57. This is allied to the preceding. The corollas are pubescent, with the segments lanceolate-awl-shaped: but the branches are hairy, and the leaves are smooth. Native of the Cape^q.

58. Flowers copious. Corollas pubescent. Native of the Cape^r.

59. Found at the Cape of Good Hope by Mr. Francis Masson. Introduced in 1774. It flowers from may to august^s.

60. Branches compound. Leaves oblong, convex, even, grooved underneath, ciliate, with spinules. Flowers large, heaped on the side into a sort of head, sessile, pubescent. Calyx rough, with

^a Linn. syst. ^p Linn. suppl. ⁱ Linn. mant.
^b Linn. amoen. & syst. ^q Hort. kew. ^j Linn. syst.
^c Hort. kew. ^r Linn. mant. ^k Linn. suppl.

^l Linn. mant. ^m Linn. spec. ⁿ Hort. kew.
^o Linn. suppl. ^p Hort. kew. ^q Linn. suppl.
^r Linn. spec. & syst. ^s Linn. syst. ^t Ibid.
^u Hort. kew. ^v Hort. kew.

white hairs, as it were doubled. Corolla bright blood-red, rough also, with white hairs, having the mouth obscurely four-cleft. Native of the Cape^k. Introduced in 1774, by Mr. Francis Maffon. It flowers most part of the year^l.

61. This is a small shrub with even branches, streaked in four rows. Leaves linear, acuminate, three-sided, even, rugged about the edge, erect, the length of the internodes, but the upper ones longer. Flowers erect, fastigate, terminating. Calyx similar to the leaves. Corolla with a cylindric patulous tube, a little longer than the leaves; border flat, red above, white underneath, the four segments subcordate. Stamens shorter than the corolla. Anthers scarcely emarginate. Native of the Cape^m.

62. Stem shrubby, determinately branched. Leaves spreading, linear, acute, longer than the internodes, slightly incurved, on white petioles. Flowers terminating, corymbed; on subtomentose peduncles, having bristle-shaped bractes in the middle. Calyx scariose, with the leaflets obcordate, complicate, keeled, bent in and rude at the tip. Corolla half-four-cleft, purple, with a pale base, twice as long as the calyx. Anthers two-horned at the tip, acuminate, very short. Style the length of the corolla. Stigma obtuse. Native of the Capeⁿ.

63. Stems distorted, as in common Heath. Leaves crowded together, spreading a little, subcylindric, even. Flowers in terminating bundles. Calyx doubled. Tube of the corolla oblong-ovate, the segments ovate, obtuse, spreading. Anthers not longer than the corolla, almost included. Stigma obtuse. Observed at the Cape by Bergius^o.

64. Stem determinately branched. Leaves linear, erect, acute, longer than the internodes, rugged at the edge. Bractes calycine, rude, approximating. Calyx rude, awl-shaped, half the length of the corolla; which is purplish, with the segments erect and acute. Anthers bifid, with a cavity on the outside, and very short. Style shorter than the corolla, but twice as long as the stamens, purple. Stigma headed, four-lobed. Germ hirsute. Native of the Cape^p. Introduced in 1774, by Mr. Francis Maffon. It flowers in march^q.

65. This resembles *E. ramentacea* in the plant, (and Thunberg makes it to be the same): Stem determinately branched. Leaves linear, erect. Flowers terminating, few, peduncled. Calyx scariose, very short. Corolla red. Anthers rugged, bifid at the tip as it were two-horned. Stigma headed. Native of the Cape^r.

66. Branches heaped above the flowers. Leaves linear, bluntish, erect. Flowers heaped, lateral, below the top of the stalk. Calyx scariose, subdiaphanous, bluntish, erect. Corolla like that of *E. albens*, with a flat sharpish border. Anthers very short. Stigma headed. Native of the Cape^s. Introduced in 1787, by Mr. Francis Maffon^t.

67. This is remarkable for having the flowering heads always divided into four flowers; before these are elongated, the head appears globular, and echinate, as in *Achyranthes*, from the very spreading yellow bristles of the leaves of the involucre and calyx. Corollas extremely hirsute, with a four-cleft mouth, the segments very short. Observed by Sparrmann far inland from the Cape of Good Hope^u.

68. Branches smooth. Leaves on the branches in sixes, on the branchlets in fours, petioled, erect, acrosc, four lines in length. Petioles smooth, scarcely half a line long. Flowers from three to six in an umbel. Peduncles filiform, somewhat hairy, two lines in length. Bractes three, awl-shaped, ciliate, pressed to the calyx. Leaflets of the calyx from a broad base awl-shaped, ciliate, grooved, two lines long. Corolla flesh-coloured, somewhat villose on the outside, scarcely an inch long, the thickness of a fowl's quill. Filaments smooth, a little shorter than the tube of the corolla. Anthers

oblong, acuminate at the base, two-parted at top as far as the middle, where they are fixed to the filaments; they are awnless, and of a brown colour. Germ turbinate, concave above, crenulate on the edge. Style red, the length of the stamens. Stigma subcapitate, very dark red. Observed by Maffon at the Cape of Good Hope. Introduced in 1773. It flowers in september and october^v.

69. Stems shrubby, filiform, covered all round with leaves. Leaves in fours, imbricate in eight rows, very short, elliptic, crowded, obtuse, ciliate, so that they appear villose. Flowers in a terminating sessile head. Calyx shorter, linear, hairy. The corolla has a four-cleft, erect, sharpish mouth. Pistil the length of the stamens, which are shorter than the corolla. Observed by Bäck at the Cape^w. Introduced in 1787, by Mr. Francis Maffon^x.

70. Leaves linear, crowded. Flowers peduncled, nodding. Calyx shorter by half than the corolla, awl-shaped, keeled. Corolla long, with the mouth obscurely four-cleft. Stamens almost membranaceous, linear, obtuse, twice as long as the corolla^y. It resembles the following species, but the calyx is simple, and the corolla obscurely four-cleft and red^z. Native of the Cape. Introduced in 1774, by Maffon^{aa}.

71. This is a brown shrub. Branches covered with branchlets in threes, crowded, very short, pubescent, clothed with squarrose leaves; which are also crowded, awl-shaped, subtrigonal, somewhat rugged at the edge, patulous, or standing out at the tip. Flowers solitary, at the ends of the branchlets, drooping, on a short, pubescent peduncle. Calyx subcartilaginous, angular, imbricate, with similar but shorter bractes, in threes. Corolla cylindric, three times as long as the leaves, with a four-cleft, acute, yellow mouth. Anthers linear, twice as long as the corolla, bifid at the tip, without any apparent filaments. Style filiform, longer than the anthers. Stigma simple. In the corolla and structure of the stamens it resembles the preceding; but the calyx is imbricate, not simple; the corolla yellow, more deeply four-cleft and sharpish, not red, obscurely four-cleft and obtuse; the leaves awl-shaped, subsquarrose-imbricate, not linear, distant and erect. Native of the Cape^{ab}. Introduced 1774, by Maffon. It flowers from january to march^{ac}.

72. Stem shrubby, determinately branched, round, twisted: bark covered with a white nap, chinky, deciduous. Branchlets very many, erect, leafy, many-flowered, very closely tomentose. Leaves on short petioles, from erect spreading, linear-lanceolate, bluntish, beneath gibbous, grooved, above somewhat concave, on both sides smooth, very minutely dotted; the younger ones ciliate at the base. Flowers numerous, axillary, peduncled, nodding a little. Peduncles the length of the leaves, capillary, pubescent. Bractes none. Calyx simple, small; leaflets ovate-lanceolate, acute, keeled, gibbous at the base, smooth. Corolla bell-cylindric, half the length of the peduncles, almost four times as long as the calyx, smooth, four-cleft at the edge; segments small, blunt, upright. Filaments erect, parallel, capillary, smooth. Anthers erect, semi-bifid; the lobes blunt, divaricating, opening at top on the inside with a roundish pore; gibbous within at the base, and smooth. Germ small, roundish. Style longer than the stamens, capillary. Stigma headed-blunt. Native of the Cape. Known only by a single specimen in the Linnean herbarium^{ad}.

73. Leaves linear, remote, patulous, with a few hairs scattered over them. The calyxes clothed with a white wool cover the whole subtruncate corolla. Native of the Cape^{ae}.

Thunberg makes this to be the same with the capitata.

74. Flowers lateral, white. Corolla covered with the white calyx. Native of the Cape^{af}.

^k Linn. spec. & syst. ^l Hort. kew. ^m Linn. mant.
ⁿ Ibid. ^o Ibid. ^p Ibid. ^q Hort. kew.
^r Linn. mant. ^s Ibid. ^t Hort. kew.
^u Linn. suppl.

^v Hort. kew. ^w Linn. suppl. ^x Hort. kew.
^y Linn. spec. ^z Linn. syst. ^{aa} Hort. kew.
^{ab} Linn. mant. ^{ac} Hort. kew. ^{ad} Smith.
^{ae} Linn. spec. & syst. ^{af} Linn. syst.

75. This little shrub has the habit of common Heath. Leaves short, smooth, with a white line underneath. Umbellets naked, without an involucre. Calyx compound. Corolla pale blue, angular. Anthers gibbous-tailed at the base. Native of Portugal¹.

76. Leaves in threes or fours, but on the upper branchlets in fives, according to the observation of Seguer. Calyx awl-shaped. Corollas cylindric. Anthers deeply bifid². Native of the South of Europe.

77. Stem like that of *Empetrum*, shrubby, somewhat rugged; the extreme branches whitish and divaricating. Leaves in fours, seldom in fives, linear, bluntish, sometimes smoothish, sometimes a little rugged, beneath convex and channelled, shortish, crowded. Flowers on the sides of the branchlets, scattered, peduncled. Calyx coloured, erect, concave, very short. Corolla blunt. Anthers without any tail, two-parted. Stigma simple. It resembles *E. herbacea*, which however has the branchlets even, the leaves sharp, the corollas ovate sharpish, the calyxes spreading, half the length of the corolla, the anthers linear, acute, twice as long, and not gibbous at the base. Native of Africa, and also of the neighbourhood of Thoulouse¹. See n. 80. which is supposed to be the same.

78. This is a small shrub, from a foot to eighteen inches in height, decumbent at bottom, then upright, branched, flexible. Leaves almost covering the whole stem, deciduous, resembling those of the fir, thickish, having a prominent nerve, narrow, very sharp, smooth. Flowers at the tops of the branchlets, on short peduncles, alternate, among the leaves. They come out in autumn, continue closed during winter, and are then green; in may the year following the flowers are unfolded, the anthers which were inclosed are protruded, the calyx and corolla opening are both changed into a pale purple or flesh-colour². Hence many authors, among whom is Linneus, have made two species of this. The calyx is four-cleft, with lanceolate segments. The corolla is larger than the calyx. And the capsule is globular³. Native of Austria, Switzerland and Silesia. Introduced in 1763, by the Earl of Coventry⁴.

79. Stem the height of a man. Leaves in fours or fives, spreading, obtuse, gibbous at the base. Flowers purplish⁵. Native of the south of Europe. It flowers from june to november⁶. Linneus sets this down as a native of England: but our plant which he supposed to be the same with his multiflora is the next species.

80. Stems twisted, trailing. Branches between scored and angular, light reddish brown, the more slender shoots ash-coloured, all lateral, to seven or more rising from the same point in the manner of an umbel, in some states of its growth giving it much the appearance of *Euphorbia Cyparissias*; when beginning to flower, gradually tapering towards the end. Leaves linear, somewhat like those of fir, bowed sideways, smooth, but not glossy, somewhat pointed, when magnified appearing to have distant serratures on the edge, which is bent in, upper surface green, slightly elevated in the middle, under whitish, convex, with a smooth furrow running along it, longer, and sometimes thrice as long as the corolla, and crowded so close as to conceal the younger shoots. Petioles shorter and narrower than the breadth of the leaf, flat, generally smooth, but sometimes slightly downy, pressed to the branch. Flowers roundish, on long slender peduncles, from the sides of the branches, beginning from below the middle, and extending to the ends, continuing on, at least in the cultivated plants, till the next season. Peduncles slender, capillary, from the base of the leaves, nearly upright, and as long as the leaves, three or four rising from a kind of caly bud, composed of lanceolate-ovate yellowish

scales fringed at the edge, three to each peduncle, two a little below the middle, opposite; the third a little below. Calyx without bractes at the base as in the other British species; segments ovate, concave, the edges bending inwards, appearing fringed when magnified, divided to the base. Corolla truly bell-shaped, pointed at the base, cloven near half way down, segments broad; soon coming to a bluntish point, spreading, generally of a pale flesh-colour, approaching to white, but sometimes with a deep tinge of purple. Filaments capillary, somewhat flattened, white, as long as the corolla. Anthers just projecting, two to each filament (or so much divided as to appear like two), spreading, ovate, blunt, blackish brown or purple, with an oval orifice on the outer side extending nearly half way down. Germ roundish, smooth, with four deep furrows. Style as thick again as the filaments. Stigma just thicker than the style, the end flat. Seeds reddish brown.

Found on heaths, as on Goon Hilly downs, going from Helfton to the Lizard point in Cornwall. It flowers from june to august⁷. The same with *E. vagans*. n. 77.

81. Branches whitish, angular. Leaves in fours, seldom in fives, even. Flowers lateral. Calyx simple, coloured, lanceolate, acute, shorter by half than the corolla. Style twice as long as the corolla. Stigma entirely simple. It resembles *E. multiflora*, but the corolla is absolutely ovate; the branches angular and white⁸.

Native of the South of Europe. Introduced about 1765 by Mr. Joshua Brooks. It flowers from march to may⁹.

82. This resembles *E. curviflora*, but the leaves are longer. Observed at the Cape of Good Hope by Thunberg¹⁰. Introduced here in 1775 by Maffon. It flowers from may to july¹¹.

83. Flowers yellow, like those of *E. lutea*, but longer. Native of the Cape¹².

84. Introduced from the Cape by Maffon in 1787¹³.

PROPAGATION AND CULTURE.

1. Common Heath, which over-runs immense tracts, especially in the elevated parts of northern countries, can be extirpated only effectually by paring and burning. In some lands, deep and cross ploughings, getting up roots with heavy harrows, burning the whole, and spreading the ashes may be sufficient¹⁴.

Dr. Anderson affirms, that wherever Heath abounds, there is generated, by the rotting of the plant, a peculiar black earth, that is not only of itself sterile, but has a powerful tendency to make any other soil unfertile; so that in improving heathy grounds, the top soil should be buried by trenching or deep ploughing¹⁵.]

1. 23. 36. 80. Notwithstanding the commonness of our British heaths, they deserve a place in small quarters of humble flowering shrubs, where by the beauty and long continuance of their flowers, together with the diversity of their leaves, they make an agreeable variety. They may be taken up, with a ball of earth to their roots, from the natural places of their growth, in autumn. The soil should not be dunged, and the less the ground is dug, the better they will thrive, for they commonly shoot their roots near the surface. They may also be propagated by seeds, but this is a tedious method.

[12. 16. 17. 38. 52. 75—79. 81. These, which are natives of the southern countries of Europe, will bear the open air in England in a dry soil and a warm situation. They may be increased and treated in the same manner with our British Heaths, and may also be propagated by layers and cuttings.

All the rest of this numerous and beautiful genus being natives of the Cape of Good Hope, or the more interior parts of Africa leading to that famous promontory, must be preserved in the dry stove,

¹ Linn. spec. & syst.

² Haller & Krock.

³ Linn. syst.

⁴ Linn. syst.

⁵ Krock.

⁶ Hort. kew.

⁷ Linn. mant.

⁸ Hort. kew.

⁹ Stokes in With. & Woodw. Mss.

¹⁰ Hort. kew.

¹¹ Linn. suppl.

¹² Linn. mant.

¹³ Hort. kew.

¹⁴ Linn. suppl.

¹⁵ Hort. kew.

¹⁶ Bath Society Papers, 1. 116.

¹⁷ Essays, 2. 195.

green house or glass case. These may be increased either from cuttings or from layers. There are not many of the species but what may be increased in the first way, provided good young shoots can be got for cuttings; especially if they are put under bell-glasses, and the pots are set where they can be shaded, and have a moderate heat. *E. empetrifolia*, *articularis*, *halicacaba*, *fascicularis*, *Maffoni*, *petiolata*, *retorta*, and a few others, have not yet been struck from cuttings: these therefore must be increased from layers, which however will not always strike the first year. These plants should have a light and rather poor soil to grow in; a composition of bog earth and light loam will suit them well.

Mr. James Donn, the Curator of the botanic garden at Cambridge, has collected upwards of sixty of these Cape Heaths, which he cultivates this year 1795; though he was appointed to his office only at Michaelmas 1794.

ERICA. See *Alyssum*, *Andromeda*, *Blæria*, *Brunia*, *Bryonia*, *Diosma*, *Empetrum*, *Hottonia*, *Passerina*, *Penæa*, *Phyllica*.

Erica Daboecia. See *Andromeda*.

— *marina.* See *Fucus*.

— *maritima.* See *Frankenia*.

ERICÆFORMIS. See *Diosma* and *Hudsonia*.

ERICOIDES. See *Elatine*.

ERICOILA. See *Gentiana*.

ERICU. See *Asclepias*.]

ERIGERON. (of Pliny, *Ἐριγέρων* of Theophrastus and Dioscorides. From *erig* spring, and *geron*, old man; because it is hoary in the spring.)

Lin. gen. n. 951. Reich. 1031. Schreb. 1287.

Juss. 180. Gertn. t. 170. Conyzoides. Dill.

gen. Conyzella. Dill. gen.

Class. 19. 2. Syngenesia Polygamia Superflua.

Nat. order of Compositæ Discoideæ. Corymbifera, Juss.

GENERIC CHARACTER.

CAL. Common oblong, cylindric, imbricate: scales subulate, upright, gradually longer, nearly equal.

COR. Compound rayed: corollets hermaphrodite, tubular in the disk. Females ligulate in the ray.

Proper of the hermaphrodite funnel-form; border five-cleft.

Of the female ligulate, linear, subulate, upright, commonly quite entire.

STAM. In the hermaphrodites: Filaments five, capillary, very short. Anthers cylindric, tubular.

PIST. In the hermaphrodites Germ very small, crowned with a down longer than its corollet. Style filiform, length of the down. Stigmas two, very slender.

PER. none. Calyx converging.

SEEDS in the hermaphrodites oblong, small. Down long, hairy.

Of the females extremely like the hermaphrodites.

REC. naked, flat.

OBS. Dillenius observes that the inmost or intermediate florets of the disk are commonly males.

One species has female naked florets.

ESSENTIAL CHARACTER.

Recept. naked. Down hairy. Cor. of the ray linear, and very narrow.

SPECIES.

1. *Erigeron viscosum.* Clammy Erigeron.

Lin. spec. 1209. syst. 753. Reich. 3. 777. hort.

ups. 258. mant. 468. Gron. orient. 267. Gouan

hort. 437. illustr. 67. Jacqu. hort. 2. t. 165.

Villars dauph. 3. 240. hort. cliff. 409. (After.)

Conyza major. Dod. pempt. 51. Clus. hist. 2. 20.

Ger. emac. 481. 1. Raii hist. 261.—vera. Lob.

ic. Mor. hist. 3. f. 7. t. 19. f. 11.

C. mas Theophrasti, major Dioscoridis. Baub. pin.

265. Mill. fig. t. 103.—major monspeliensis odo-

rata. Baub. hist. 2. 1053.—major verior Diosco-

ridis. Park. theat. 125.

Peduncles one-flowered, lateral, leaves lanceolate, tooth-
letted in the middle, reflex at the base, calyxes squar-
rose, corollas radiate.

2. *Erigeron graveolens.* Strong-smelling Erigeron.

Lin. spec. 1210. syst. 754. Reich. 3. 778. mant.

468. aman. 4. 290. Gouan. hort. 437. illustr.

67. Villars dauph. 3. 239.

Conyza minor vera. Lob. ic. 346. Barrel. ic. 370.

Baub. hist. 2. 1054. Ger. emac. 481. 2. Park.

theat. 127. 9. Raii hist. 261. Mor. t. 20.

f. 12.

C. femina Theophrasti, minor Dioscoridis. Baub.

pin. 265.

Leaves sublinear, quite entire, branches lateral, many-
flowered.

[3. *Erigeron glutinosum.* Glutinous Erigeron.

Lin. syst. 754. Reich. 3. 778. mant. 112. Ger.

prov. 203. n. 7.

Conyza montana, fol. glutinosi pilosis. Baub. pin.

265. Mor. t. 19. f. 19.

C. mont. saxatilis, hyssopi fol. villosa & glutinosa,

hispanica. Barrel. ic. 158.

C. mont. Myconis. Dalech. hist. 1200.—fol. Hyf-

sopi vulgaris villosa. Baub. hist. 2. 1054. Raii

hist. 265.—pilosa. Park. theat. 125. 5.

Leaves lanceolate-linear, hairy-viscid, peduncles one-
flowered.

4. *Erigeron ficulum.* Red-stalked Erigeron.

Lin. spec. 1210. syst. 754. Reich. 3. 779. hort.

cliff. 407. Gouan. hort. 438.

Conyza ficula annua, fol. atro-virentibus, caule ru-

bente. Bocc. sic. t. 31. f. 4. Mor. hist. 3. 115.

f. 7. t. 20. f. 28. Pluk. phyt. t. 168. f. 2.

C. caul. rubentibus tenuioribus, fl. luteo nudo.

Magn. monsp. t. 76.

Conyza species fol. virgæ aureæ. Baub. hist. 2. 1049.

Raii hist. 265.

Lower calycine scales loose, longer than the flower,
peduncles leafy.

5. *Erigeron carolinianum.* Carolina Erigeron.

Lin. spec. 1210. Reich. 3. 779. Dill. elth. 412.

t. 306. f. 394. (Virga aurea).

Stem panicled, flowers subsolitary, terminating, leaves

linear, quite entire.]

6. *Erigeron canadense.* Canadian Erigeron.

Lin. spec. 1210. Reich. 3. 779. hort. cliff. 407.

ups. 258. mant. 468. Hudf. angl. 363. With.

902. Hall. belv. n. 84. Scop. carn. n. 1060.

Neck. gallob. 350. Pollich pal. n. 789. Leers

herborn. n. 654. Krock. fles. n. 1381. Gron.

virg. 122. Villars dauph. 3. 239.

Conyzella. Dill. cat. 160. & app. 142. t. 8.

Conyza annua acris alba elatior, linariæ foliis. Bocc.

sic. 86. t. 46. Mor. t. 20. f. 29. Petiv. brit.

t. 16. f. 12. Raii syn. 175. hist. 271.

Virga aurea virginiana hirsuta, fl. pallido. Zanon.

hist. 1. 204. t. 78.

Eupatorium cannabinum americanum angustifolium.

Park. theat. 595. 6.

Flowers in panicles, hairy-rough; leaves lanceolate,
ciliate.

7. *Erigeron bonariense.* Buck's-horn Erigeron.

Lin. spec. 1211. Reich. 3. 780. hort. cliff. 407.

ups. 258. Murr. prodr. 179. Dill. elth. 344.

t. 257. f. 334. (Senecio).

Leaves rolled back at the base.

[8. *Erigeron jamaicense.* Jamaica Erigeron.

Lin. spec. 1210. Reich. 3. 780. amæn. 5. 406.

Swartz obs. 305. t. 8. f. 2. Brown. jam. 320.

Sloan. jam. 1. 260. t. 152. f. 3. (Senecio).

Stem few-flowered, subvillose, leaves wedge-form-lan-
ceolate, with two serratures on each side.

9. *Erigeron philadelphicum.* Spreading Erigeron.

Lin. spec. 1211. syst. 754. Reich. 3. 780. Lour.

cochin. 500.

Stem many-flowered, leaves lanceolate, subserrate, those
on the stem half-stem-clasping, floscules of the ray
capillaceous, the length of the disk.

10. *Erigeron purpureum.* Purple Erigeron.

Ait. hort. kew. 3. 186.

Stem many-flowered, hairy, leaves oblong, somewhat
toothed, stem-clasping, corollas of the ray capilla-
ceous, longer than the disk.

11. *Erigeron ægyptiacum.* Egyptian Erigeron.

Lin. syst. 754. Reich. 3. 780. mant. 112. 517.

Jacqu. hort. 3. t. 19.

E. ferratum. Forsk. ægypt. 148.

- Conyza capitata* f. *globosa*. *Bocc. sic. t. 7. f. B.*
Mor. 114. t. 20. f. 14.
 Leaves half-stem-clasping, spatulate, toothed, flowers globular.
12. *Erigeron Gouani*. Cluster-flowered *Erigeron*.
Lin. spec. 1212. syst. 754. Reich. 3. 781. mant. 469. Gouan illustr. 66. Jacqu. hort. 3. t. 79.
 Flowers heaped, calyxes scarious, leaves lanceolate, somewhat toothed, scabrous about the edge.]
13. *Erigeron acre*. Blue *Erigeron*.
Lin. spec. 1211. Reich. 3. 781. hort. cliff. 407. Fl. lapp. 308. suec. n. 741. Hudf. angl. 363. With. 903. Curtis lond. 1. 60. Lightf. scot. 474. Relh. cant. n. 607. Gärtn. fruct. 2. 448. Hall. helv. n. 85. Neck. gallob. 349. Pollich pal. n. 790. Leers herborn. n. 655. Krock. files. n. 1382. Villars dauph. 3. 238.
Conyzoides. Dill. gisf. 154.
Conyza cærulea acris. Bauh. pin. 265. Dod. pempt. 641. 4. Ger. emac. 484. 10. Raii hist. 270. Pet. brit. 16. 4.
C. odorata cærulea. Park. theat. 126. 6.
C. perennis acris cærulea. Mor. t. 20. f. 25.
Aster arvensis cær. acris. Tourn. inst. 481. Raii syn. 175.
Amellus montanus æquicolorum. Col. ecphr. 2. t. 26.
Senecio f. Erigeron cær., aliis Conyza cær. Bauh. hist. 2. 1043. 2.
 Peduncles alternate, one-flowered.
14. *Erigeron alpinum*. Alpine *Erigeron*.
Lin. spec. 1211. syst. 754. Reich. 3. 781. mant. 468. Hall. helv. n. 86. Scop. carn. n. 1061. Ger. prov. 202. 6. Krock. files. n. 1383. Fl. dan. t. 292. Villars dauph. 3. 236.
Conyza cærulea alpina major & minor. Bauh. pin. 265. prodr. 124. Raii hist. 271. n. 2, 3.
Asteri montano purpureo similis f. globulariæ. Bauh. hist. 2. 1047. f. 3.
 Stem with one or two flowers, calyx subhirsute, leaves obtuse, villose underneath.
- [15. *Erigeron uniflorum*. Dwarf *Erigeron*.
Lin. spec. 1211. Reich. 3. 782. hort. cliff. 407. fl. suec. n. 742. Hall. helv. n. 87. Scop. carn. n. 1062. Gunn. norv. n. 665. Allion. pedem. n. 722. Villars dauph. 3. 235. Lin. lapp. 307. t. 9. f. 3. (Aster).
Aster montanus cæruleus omnium minimus. Raii suppl. 163.
Conyza cærulea alpina major. Bauh. pin. 265. prodr. 124.
 Stem one-flowered, calyx hairy.
16. *Erigeron gramineum*. Grass-leaved *Erigeron*.
Lin. spec. 1212. Reich. 3. 782. Gmel. sib. 2. 174. t. 76. f. 2. Amm. ruth. 215. (Aster).
 Stem one-flowered, leaves linear, ciliate, scabrous.
17. *Erigeron camphoratum*.
Lin. spec. 1212. Reich. 3. 782. hort. ups. 259. Gron. virg. 57. 122.
 Leaves lanceolate-ovate, villose, serratures cartilaginous at the tip.
18. *Erigeron japonicum*.
Lin. syst. 754. Thunb. jap. 312.
 Leaves sessile, obovate, serrate, villose, flowers panicled.
19. *Erigeron scandens*. Climbing *Erigeron*.
Lin. syst. 754. Thunb. jap. 313.
 Leaves ovate, serrate, villose, flowers axillary, stem climbing.
20. *Erigeron tuberosum*. Tuberous-rooted *Erigeron*.
Lin. spec. 1212. syst. 754. Reich. 3. 783. Gron. orient. 266. Gouan. monsp. 438. illustr. 67. Ger. prov. 203. 8. Sauv. monsp. 55.
 α. *Chondrilla bulbosa syriaca, fol. angustioribus. Bauh. pin. 130.*
C. altera Dioscoridis putata. Clus. hist. 2. 145.
C. marina. Dalech. 1366. Mor. 114. t. 19. f. 20.
 β. *C. bulb. syr. fol. latioribus. Bauh. pin. 130.*
Conyza tuberosa lutea, fol. angustis & rigidis. Magn. monsp. 77. Mor. t. 20. f. 15.
- γ. After *conyzoides* *Gesneri. Mor. 118. t. 22. f. 7. Ger. emac. 487. 5. Raii hist. 264. 15.*
 Leaves linear, branches one-flowered, stem suffruticose.]
21. *Erigeron foetidum*. Stinking *Erigeron*.
Lin. spec. 1213. syst. 755. Reich. 3. 783.
Senecio africanus fol. retuso. Mill. fig. 2. 155. t. 233.
S. foet. afr. perennis, &c. Pluk. alm. t. 223. f. 4.
Conyza afr. senecionis fl., retusis fol. Herm. lugdb. t. 662.
 Pseudo—*Helichrysum frutescens* afr., ret. fol. virid., fl. luteo nudo. *Mor. 90. t. 10. f. 1.*
 Leaves lanceolate-linear, retuse, flowers corymbed.
- [22. *Erigeron obliquum*. Oblique-leaved *Erigeron*.
Lin. syst. Reich. 3. 784. mant. 573. Retz. obs. 5. n. 123. p. 6.
 Very much branched, leaves ovate, oblique.
23. *Erigeron tricuneatum*. Wedge-leaved *Erigeron*.
Lin. syst. 755. suppl. 368.
 Somewhat shrubby, leaves wedged, three-lobed.
24. *Erigeron pinnatum*. Pinnatifid-leaved *Erigeron*.
Lin. syst. 755. suppl. 368.
 Leaves pinnatifid, toothed.
25. *Erigeron fumatrense*.
Retz. obs. 5. n. 75. p. 28.
 Tomentose, flowers raceme-panicled, leaves lanceolate, subserrate.
26. *Erigeron sericeum*. Silky-leaved *Erigeron*.
Retz. obs. 5. n. 76. p. 28.
 Flowers panicled, leaves ovate-lanceolate, tomentose-silky, entire and serrate, appendicled at the base.
27. *Erigeron hirsutum*.
Lour. cochinch. 500.
 Stem hispid, leaves linear-lanceolate, subserrate, very hairy on both sides.
28. *Erigeron rivulare*.
Swartz. prodr. 113.
 Leaves wedge-shaped, acute, rough with hairs, toothed on both sides at the tip, ciliate on the edge, those on the stem sessile, stem almost simple, erect, few-flowered.
29. *Erigeron decurrens*.
Vahl symb. 1. 72.
 Leaves decurrent, linear, tomentose, flowers panicled.
30. *Erigeron incanum*.
Vahl symb. 1. 72.
 Leaves linear, tomentose, toothed a little, flowers corymbed, stem shrubby.

DESCRIPTIONS, &c.

1. Stem upright, stiff, striated, hairy, viscid, branched from the very bottom. Leaves stem-clasping, thick, rough with hairs, having glands between them exuding a clammy juice, strong smelling, bent down at the base, rounded and stem-clasping: on the branches linear, entire. Peduncles two-leaved, one-flowered, scarcely longer than the leaves. Flowers radiate. Seeds pubescent*.]

Root perennial. Stems near three feet high. Leaves alternate, four inches long, and two broad in the middle. Flowers single, on pretty long footstalks, some from the side, others from the end of the stalk; they are yellow, have an agreeable odour, and appear in July.

[Native of the South of France, Italy, Sicily, Portugal and Spain, by way sides, and on the borders of vineyards. Cultivated by Mr. Miller before 1759. It is used to drive away fleas and gnats; the strong scent, as some suppose, being disagreeable to those insects; but it is probable they are caught by the clammy juice of the leaves and stalks*.—The old name of this is *Great Sweet Fleabane*, or *Great Fleawort*.

2. Root annual. Stems upright, purplish, hairy and viscid, from eight or ten to eighteen inches in height, striated, branched the whole length. Branches patulous, at bottom longer, alternate, simple, crowded, all flowering. Leaves sessile, narrow-lanceolate, quite entire, a little scabrous, with very small hairs viscid at the end scattered over them,

* Linn. spec. mant. syst. & Gouan illustr.

* Mill. fig.

strong-smelling, of a russet dusky colour. Peduncles at top lateral, solitary, with leaflets longer than the flowers scattered over them, one-flowered; sometimes two-flowered, and then one is very short. Calyx oblong, with patulous, upright leaflets, purplish at the end before flowering time. Corolla yellow, small, with a minute upright ray of five or six florets, purplish underneath. Down rufescent^b. Monf. Villars thinks that this species rather belongs to the genus *Solidago*.]

The stalks are in gardens stiff, and three feet high. The flowers are produced in close bunches from the side of the stalk towards the top; they appear in July, and in warm seasons the seeds ripen in England.

[Native of the South of France, and Italy; very frequent near Madrid.—Called formerly *Small true Fleabane*. Cultivated by Mr. Miller in 1768.

3. Root perennial. Stems a long span in height, slender. Leaves quite entire, narrow and sharp, villose and glutinose. Peduncles alternate, one-flowered, few in number; semiflorets twenty and more in a flower^c, purple.—South of France and Spain, on mountains near the coast; flowering in August.

4. Annual. Stems red. Flowers without any ray, small. Peduncles covered with linear, recurved, minute leaves. It greatly resembles the second species, except that it has no ray whatever; and it is allied to *Inula pulicaria*.—In Sicily, and about Montpellier in marshes^d. It flowers in August and September; and was first introduced in 1779, by John Fothergill, M. D.^e

5. Stems three feet high and more, straight, round, streaked, the thickness of the little finger at bottom, where they are red, growing gradually more slender upwards; the leaves from top to bottom are frequent, very narrow, and somewhat hairy. Towards the top the stem puts forth branches, forming in the whole a sort of pyramid; these are covered with leaves like those of the stem, only shorter and narrower; each of these bears one small flower, sometimes more. The root-leaves are like those on the stem, only shorter and blunter.—It flowered in the green-house of the Eltham garden in November 1727^f; but being a native of North America, it is hardy enough to flower in the open ground in July and August. It is perennial.—In the text of *Hortus Elthamensis* this is marked fig. 393. but on the plate fig. 394.

6. Root annual. Stem firm, hairy, sometimes three or four feet high, frequently crooked, much branched towards the top, and even from the middle, the branches gradually shorter, and forming a long cone. Lower leaves oval, tapering to a foot-stalk, with large blunt distant teeth; higher up lanceolate, distantly serrate, (or entire) slightly hairy on the upper, but more so on the lower surface, those on the branches and at their base linear-lanceolate, entirely sessile. Flowering heads numerous, on simple or branched slender peduncles. Outer scales of the calyx short; inner longer, linear, with a green line along the back, and whitish membranaceous edges. Florets very small. Seeds minute, crowned with a sessile feather of few simple rays, as long as the florets^g.—Florets in the centre yellow, in the circumference white, with a tinge of red^h. The former are usually four-cleftⁱ, but sometimes only three-cleft^k, in number as far as sixteen, of the latter there are sometimes forty-six^l.

This came originally from North America; but now has the appearance of being indigenous in many parts of Europe: with us, it is not uncommon about London on cultivated grounds, and on rubbish. It flowers in August. Petiver calls it white Golden-rod.

This being a naturalized plant, it would be curious to ascertain when it first appeared among us

in a wild state. In Ray's synopsis it is said to have been observed by Dr. Tancred Robinson. Merret (in 1667) says it is plentiful at Heddington hill, by Oxford, and in Yorkshire. Petiver mentions its growing about London.

7. Root annual. Stem angular, firm, hirsute, branched at top. Leaves alternate, lanceolate, hirsute and soft, sessile; the lower ones tooth-gashed, the upper entire, narrower, and almost linear, towards the base waved, the midrib more prominent and hirsute. Flowers on the top of the stem, and at the extremities of the branches, one or two on a peduncle, and alternate; with pubescent calyxes: they are smaller than those of *E. acre*, but larger than those of the foregoing species^m.

Native of Buenos Aires in South America. Cultivated in the Eltham garden in 1732. It flowers in July and August.

8. Root almost single, but sometimes subdivided, descending. Root-leaves lanceolate-wedge-form, subsessile, rounded at the end, with two, seldom three, distant serratures at top on each side. Stems erect or ascending, often a span high, filiform, pubescent, almost single. Stem-leaves alternate, distant, lanceolate, acute, small, nearly entire. Flowers subsolitary, terminating, peduncled, whitish. Common calyx single, scarcely imbricate; scales membranaceous about the edge. Down appearing serrate when magnified, of a brown colour. Receptacle warted. Calyx spreadingⁿ.

Sloane observes that the roots are smooth, white, no bigger than threads, and an inch and half long. Stem round, hoary, five or six inches high, having few leaves, placed without order, sessile, with a narrow beginning, augmenting to a round end, about an inch long, rough, hoary, of a whitish green colour, very often having two or three notches. Flowers on the top of the stem, and from the axils, resembling those of Groundsel, composed of many small yellow florets close set together, encircled by many whitish, long, narrow semiflorets. Native of Jamaica.

9. Native of North America. Observed in Canada by Kalm. Perennial. It flowers from June to August. Introduced about 1778^o.

Loureiro thus describes a Cochinchinese plant under this name. Stem herbaceous, three feet high, erect, branched. Leaves sinuate. Flowers yellow, paniced, terminating, oblong, many. The female florets in the ray very slender, erect. Receptacle naked. Down hairy. It agrees in the specific character with this species, but it is doubtful whether they are the same species. The description in Linneus's species belongs to *E. ægyptiacum*.

10. Root perennial. Stem herbaceous, branched, a foot or more in height. Leaves alternate, sharp, either entire, or with a few teeth about the edge. Flowers paniced. Leaflets of the calyx lanceolate, sharp, equal, smooth, slightly keeled; the keel having a few hairs scattered over it. Corolllets of the ray very numerous, purple; of the disk yellow.—Native of Hudson's Bay. Flowering in July and August. Introduced in 1776, by Messrs. Gordon and Græffer^p.

11. Root annual. Stem simple, upright, a foot and half high, somewhat streaked, ash-coloured, pubescent, and somewhat viscid. Leaves alternate, sessile, scarcely half-stem-clasping, spatulate, or obovate-lanceolate, bluntish, subpubescent, marked with lines, having about five teeth, but entire at the base. Flowers paniced, terminating, four or five, peduncled, roundish, on purplish peduncles. Calyx roundish, with subulate, pubescent scales, patulous at the end. Corolla yellow: florets minute: those in the ray naked and abundant. Style cloven, yellow, capillary, quickly disappearing. Native of Sicily and Egypt^q.

12. Root annual; bitter. Stem upright, round, a foot high, simple, with a few upright hairs. Leaves

^b Linn. Gouan, Villars.

^c Linn. spec. & fyst.

^d Dillenius.

^e Haller.

^f Woodw. Mff.

^g Scopoli.

^h Ger. prov.

ⁱ Hort. kew.

^j Withering.

^k Pollich.

^l Murray.

^m Ibid.

ⁿ Swartz.

^o Hort. kew.

^p Linn. mant.

alternate, half-stem-clasping, spatulate, level, with a few sharpish serratures, the edge and keel subciliate. Flowers paniced. Calyx roundish, imbricate; scales lanceolate, naked, convex, close, scarious about the edge, bluntish, not patulous with a subulate tip, as in *E. ægyptiacum*. The female corollets apetalous, more copious than the hermaphrodites. Stigma cloven, oblong. It approaches very near to *E. ægyptiacum*.*

According to Gouan, the stem is smooth, very slightly streaked, rough at the top, with whitish hairs pressed close. The root-leaves and lower stem-leaves are petioled, ovate, ciliate, an inch wide, near two inches in length, or as long as the petiole, very smooth, quite entire at the base, toothed from the middle to the tip; teeth large, equal, distant: middle stem-leaves sessile or rather stem-clasping, lanceolate: upper stem-leaves, and those on the branches, narrower, hirsute, quite entire. Peduncles axillary and terminating, bearing from three to six flowers, hoary, an inch and half long, corymbed: pedicels a line or two in length. Flowers the size of those on *E. tuberosum*, and globular. Calyx having the colour and appearance of *Conyza chinensis*, but with the scales not at all squarrose, fleshy, green, membranaceous at the edge, and very smooth. Corollas whitish, with a white down.

Native of the Canary islands. It flowers in July and August. Introduced in 1772, by Monf. Richard†.

13. Root perennial, or according to some biennial, fibrous, acrid. Stems six to eighteen inches high, upright, somewhat angular, hairy, often purple; in some scarce branched at all, in other plants very much so. Leaves, the lower ones oval or spatulate, tapering to a footstalk; the upper lanceolate, the uppermost linear; hairy on both surfaces, but most on the edges, which are entire and often waved. The upper part of the stem is divided into alternate branches, each bearing a single flower. This never expands: it is externally purple, internally yellow, with a cavity in the middle. Scales of the calyx unequal, subulate, hairy, green. The corollets are usually of three kinds; first, a few hermaphrodites in the middle of the disk, with a five-cleft border, and shorter than the calyx: secondly, numerous females, on the sides of the disk, with a slender tube, the border obliquely truncate, the length of the calyx: thirdly, many (about forty) females in the ray; these are ligulate, upright, with two teeth on the edge, and longer than the calyx: the styles of all are of the same height, and equal to the feather, which is sessile, with yellow simple rays. In dry lofty pastures, frequent, especially in sandy and calcareous soils. It is also often found on walls. Near London it is not a common plant; but it occurs frequently near Charlton-wood.

Johnson in Gerard says that he first observed it in company of Mr. George Bowles, Mr. John Bugs, and others, by Farmingham in Kent; and the last year (1635) Mr. William Broad found it growing at the blockhouse at Gravesend.

It flowers from July to September.—The Germans take a decoction of it to attenuate viscid phlegm.—Cows and goats refuse it‡.

Our English botanists name it *blue-flowered* or *purple Fleabane*. Several species of this genus have this name of *Fleabane* in English; which tends (as Mr. Curtis very well observes) to confound this with the genus *Conyza*.

Gærtner remarks, that it has some affinity with *Chrysocoma*, and that *Erigeron* is a *Chrysocoma* with a difform ray.

14. This is like the foregoing, inasmuch that Haller doubts whether it be a distinct species, or only a variety. It has frequently a higher stem, but the height varies much in both; commonly one-flowered, seldom two-flowered. The flowers are larger; the semiflorets more numerous; the leaves longer; the feather dense and whitish§.

It varies with one, two and three flowers on a stalk, and sometimes they are paniced: it varies also with a villose and smooth calyx*. The flowers in this come out from the middle and even the lower part of the stem; whereas in most of the species they branch out only from the upper part†.

Native of Alpine pastures. Found on Ben Lavers in Scotland by Mr. Dickson in 1789. Perennial; flowering in July and August.

Cultivated in 1759, by Mr. Miller‡.

Monf. Villars has a species, which he names *Erigeron atticum*, from its resemblance to *Aster atticus* (Amellus Linn.) He describes it as a foot high, and upright; the lower leaves large, spatulate, rough, three-nerved; the stem-leaves sessile, lanceolate, gradually less and less: all hirsute, and a little viscid. Flowers three, five or seven, in a terminating corymb. Peduncles naked, but villose and glutinose, as well as the calyx. Flowers blue, large, very wide, without any division at the extremity of the ray. Seeds villose, terminated by an egret of white toothed hairs. Though it differs much from *E. alpinum*, yet that differs so much from itself, that it may be only a variety.

15. Root perennial. Stems a finger's length; scarcely three inches high, according to Haller; from a finger's length to a span and more, as others say; very simple, streaked, with wandering hairs scattered over them. Leaves few, lanceolate, almost smooth on the upper surface, but with spreading hairs scattered over the lower: the stem-leaves often sublinear, the root-leaves oblong. The calyx consists of very many, lanceolate scales, equal in length; the outer ones broader, spreading every way, with long hairs scattered over each surface. Ray white, length of the calyx, petals very numerous, linear, quite entire; style filiform, white, sharp, bifid. Corollets of the disk yellow, numerous, with yellow, bifid, obtuse styles. The flower is as large as in the foregoing species, thick, the scales covered with a white nap, lanceolate, broader: all the semiflorets ligulate, with no imperfect ones: sometimes purple, according to Pontedera and Scheuchzer*. All the varieties with one and many flowers, with a smooth and hairy calyx, with blue and white flowers, make but one species, in the opinion of Allioni. Hence Scopoli has named this *E. polymorphum*. Monf. Villars on the contrary, thinks that this bears little affinity to *E. alpinum*, or any other; from which it is easily distinguished by the open scales of the calyx, loaded with long and wider hairs, be the plants ever so small. He refers Oeder's figure to this species; but observes that he has never seen any specimen so large as that represents.

Native of the European mountains from Lapland to Italy.

It flowers in August and September. Introduced in 1775, by Drs. Pitcairn and Fothergill†.

16. A very small perennial plant, guarded with fading, dry leaves*. Native of Siberia.

17. Annual. Native of Virginia.

18. Annual. Stem simple, filiform, hairy, upright, a foot high. Leaves attenuated to the petioles, half-stem-clasping, obtuse, upright, an inch in length. Flowers terminating. Feather simple, ferruginous. Native of Japan; flowering in June.

19. Stem filiform, branched, purplish, smooth; Leaves from each bud three or four, subsessile, sharp, with setaceous teeth, villose on both sides, half an inch in length. Flowers among the leaves, axillary, solitary. Having seen only a single flower, and that not open, Thunberg says he is not very certain about the genus‡.

20. Root perennial, bitten. Stem short, woody. Branches simple, one-flowered. Leaves scattered, lanceolate, subpetioled, quite entire. Flowers yellow, like those of *Aster*, terminating, sessile. Feather gray*. According to Gouan, the stem is from two

* Linn. mant.

† Woodw. Mss. Curtis, Leers, Withering.

‡ Hort. kew.

§ Krocken.

* Ger. prov.

† Linn. fucc. Haller, Gunner.

‡ Linn. spec.

§ Villars.

† Thunberg.

* Hort. kew.

† Hort. kew.

‡ Linn. spec. & syst.

inches to a hand in height, covered with pellucid scattered hairs, thicker at the base. Branches few, terminating, divaricate. Lower leaves obovate-lanceolate or spatulate, often quite entire, not seldom toothletted. Peduncles rigid, rough with hairs, terminating, thickened at top; rather hispid, and frequently leafy. Flower twice as large as some of the other species. Calyx squarrose, with the scales not unfrequently broader at the tip, and almost equal^f.—It is the link between this genus and *Aster*. The varieties are from Gronovius^g.

Native of the South of France and Syria.

21. Root perennial, thick, fibrous, from which arise several upright, hairy stalks, near four feet high, putting out several side branches. Leaves sessile, hairy, a quarter of an inch broad towards the end, where they are broadest, and diminishing gradually to their base; of a deep green on their upper side, and pale on their under, continuing all the year: they come out from the side of the stalk and branches in clusters from the same point, and without order on every side. The stem is terminated by several large corymbs of golden-coloured flowers. These appear late in the autumn, continuing in beauty great part of the winter, fading in the spring, and are sometimes succeeded by oval seeds, which ripen in England.

The stems generally decay the second year, and are then supplied by new ones from the same root; the old ones remaining with their green hairy leaves in vigour, until the young ones are grown to a considerable height. Native of the Cape of Good Hope; and has been long cultivated in the curious European gardens^h.

It has a great resemblance to *Inula fœtida*, but the flowers are flosculousⁱ.

Cultivated in 1722, in the botanic garden at Chelsea^k.

22. Annual. Stem herbaceous, a hand high, round, erect, hairy, branching very much. Branches from all the axils; the lower ones gradually longer, diffused, at top dichotomous, opposite. Leaves sessile, half-stem-clasping, veined, not wrinkled, brittle, thinly haired; almost naked underneath, toothletted, sharpish. Flowers solitary, the length of the peduncle, one-flowered, copious. Calyx cylindric, pubescent, with numerous, equal, subulate, approximating leaflets. Corollas yellow. Corollets of the disk five-toothed; of the ray copious, but scarcely conspicuous. Stigmas of the disk erect, of the ray patulous. Native of the East-Indies^l.

23. A small shrub, very much branched or panicled, leafy. Leaves subpetioled, scarcely half an inch long, naked. Flowers terminating, sessile, several heaped together, the length of a leaf. Calyx the size of a lentil seed. Female florets copious, apetalous. Feather scarce longer than the calyx, simple. Native of Mexico; observed there by Mutis^m.

24. Stem herbaceous, upright, a foot high, somewhat hispid, simple. Leaves the length of a finger, somewhat toothed, roughish. Flowers terminating, subglomerate, yellow, the same size as in *E. acre*. Feather white. Native of the Cape of Good Hopeⁿ.

25. Stem three feet high and more, round, streaked, tomentose, red. Leaves sessile, tomentose-hispid; the lower ones toothed, the upper serrate. Peduncles long, raceme-panicled, with one or two narrow-lanceolate leaves on them, generally entire. Calyx tomentose, with linear leaflets, the length of the feather. Florets of the ray many, capillary, a little shorter than the feather; of the disk funnel-form, few, the length of the feather, fertile. Feather simple, copious. Native of Sumatra^o.

26. Stem upright, simple, tomentose. Leaves petioled, with one or two long, sharp teeth at the base on each side. Panicle diffused. Flowers the

size of *Conyza cinerea*. Calyx imbricate, the outermost leaflets very short, the inner a little longer than the florets: these seem to be yellow (as far as can be seen from a dry specimen), and there are about twenty in the disk: in the ray fewer, and those filiform. Feather simple, reddish.—Native of Java. The two last were brought to Europe by Wennerberg^p.

27. Stem herbaceous, two feet high, erect, round. Leaves scattered. Flowers few, in a terminating erect panicle. Florets in the disk yellow; in the ray stiff, quite entire, blue, many. Calyx subsquarrose. Native of China near Canton^q.

28. This is an annual plant, native of Jamaica and Hispaniola^r.

29. Stem erect striated pubescent, tomentose at top, branches woody. Leaves quite entire. Pedicels capillary, with a pair of minute leaflets towards the tip. Calyxes villose; scales bristle-shaped, shorter than the down. Corollas of the ray naked. Native of Arabia.

30. This is a shrub with tomentose branches. Leaves sessile, approximating, gradually narrowed at the base, sharpish, a little rolled back at the edge, sometimes having a single tooth or two. Corymbs terminating, many-flowered. Calyx subvillose, with linear leaflets. Corollets of the ray naked. Down ferruginous, longer than the calyx. Native of Arabia Felix^s.]

PROPAGATION AND CULTURE.

1. This plant is propagated by seeds, which, if sown in autumn, will more certainly succeed than those which are sown in the spring. When the plants come up, they should be thinned if they are too close, and kept clean from weeds till autumn, when they should be transplanted where they are to remain. They delight in a dry soil, and a sunny exposure. The second year the plants will flower and perfect their seeds, but the roots will continue several years, and annually produce their flowers and seeds.

6, 7, 13, 14. Are preserved in botanic gardens for the sake of variety, but are seldom admitted into gardens for pleasure. The fourteenth sort is a perennial plant, which grows naturally on the Alps, and may be propagated by seeds in the same manner as the first sort, but should have a shady situation, and a moist soil.

The others are annual plants, which, if once admitted into a garden, and suffered to scatter their seeds, will become very troublesome weeds there. They will help very well to cover rubbish or rock-work.

21. This is too tender to thrive in the open air in this country, so the plants should be kept in pots; and if in the winter they are placed in a common frame, where they may have a large share of free air in mild weather, and screened from hard frosts, they will thrive better than with tender treatment. It is easily propagated by cuttings, which, if planted in may, will readily put out roots, and the young plants will flower the autumn following.

[*ERIGERON*. See *Conyza*, *Crepis*, *Inula*.

ERIGERUM. See *Senecio*.

ERINACEA. See *Anthyllis*.

ERINACEUS. See *Hydnum*.

ERINGO. See *Eryngium*.]

ERINUS. (*Epinos* of *Dioscorides*. *Erineon* of *Pliny*. Derivation unknown.)

Lin. gen. n. 771. *Reich.* 832. *Schreb.* 1034.

Juss. 100. *Gartn. t.* 55. *Ageratum Tourn.* 422.

Class. 14. 2. *Didynamia Angiospermia*.

Nat. order of *Personatæ*.—*Pediculares*. *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* five-leaved: *leaflets* lanceolate, upright, nearly equal, permanent.

COR. one-petalled, unequal. *Tube* ovate-cylindric, length of the calyx, bent back. *Border* flat, five-parted: *divisions* equal, obcordate.

^f Illustr. 67.

^g Linn.

^h Linn. suppl.

^g Linn. spec. & syst.

^k Hort. kew.

ⁿ Ibid.

^h Mill. fig.

^l Linn. mant.

^o Retz.

^p Retz.

^q Loureiro.

^r Swartz.

^s Vahl.

STAM. Filaments four, very short, within the tube of the corolla, of which the two opposite ones are a little longer. Anthers small.
 PIST. Germ somewhat ovate. Style very short. Stigma headed.
 PER. Capsule ovate, rolled up in the calyx, two-celled, gaping two-ways.
 SEEDS numerous small.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. border five-cleft, equal, with the lobes emarginate; upper lip very short, reflex. Caps. two-celled.

SPECIES.

1. *Erinus alpinus*. *Alpine Erinus*.
Lin. spec. 878. *syft.* 570. *Reich.* 3. 175. *mant.* 421. *Gärtn. fruct.* 261. *Hall. belv. n.* 302. *Sauv. monsp.* 116. *Curt. magaz. t.* 310. *Villars dauph.* 2. 443.
Ageratum ferratum alpinum. *Baub. pin.* 221.
A. purpureum. *Dalech.* 1184. *Baub. hist.* 3. 144. *f. i.* *Raii hist.* 1055. *Park. theat.* 79.
β. A. minus saxatile, fl. albo. *Barrel. ic.* 1192.
Flowers racemed, leaves spatulate.
- [2. *Erinus africanus*.
Lin. spec. 878. *Reich.* 3. 176. *hort. cliff.* 501. *n. 2.* (Buchnera). *Burm. afr.* 139. *t. 50. f. 1.* *Pluk. mant.* 83. *Raii suppl.* 401.
β. Lin. mant. 421. *Buchnera fol. acutis dentatis.* *Lin. hort. cliff.* 501. *n. 1.* *Gron. virg.* 95.
Flowers lateral, sessile; leaves lanceolate somewhat toothed.
3. *Erinus capensis*.
Lin. spec. *Reich.* 3. 176. *mant.* 252.
E. Lychnidea. *Lin. suppl.* 287.
Flowers spiked, leaves linear toothed.
4. *Erinus fragrans*.
Ait. hort. kew. 2. 357.
Selago Lychnidea. *Lin. spec.* 877. *Reich.* 3. 172. *Amoen.* 6. 89. *Berg. cap.* 158.
α. limbo corollæ fordide purpurascens.
Dark-flowered Erinus.
β. limbo cor. fordide flavescente.
Yellow-flowered Erinus.
Leaves lanceolate-oblong toothed; divisions of the border entire.
5. *Erinus peruvianus*.
Lin. spec. 879. *Reich.* 3. 177. *Feuill. peruv.* 3. *t. 25. f. 3.* (Lychnidea).
Leaves lanceolate-ovate serrate.
6. *Erinus maritimus*.
Lin. syst. 571. *suppl.* 287.
Leaves lanceolate quite entire smooth; divisions of the border cloven half way.
7. *Erinus tristis*.
Lin. syst. 571. *suppl.* 287.
Leaves oblong gashed toothed, divisions of the border emarginate.
8. *Erinus laciniatus*.
Lin. spec. 879. *Reich.* 3. 177. *Feuill. peruv.* 3. 35. *t. 25.*
Verbena Aubletia. *Curt. magaz.* 308. *Ait. hort. kew.* 1. 33. *Lin. syst.* 66. *suppl.* 86. *Jacqu. hort.* 2. 82. *t. 176.*
Buchnera canadensis. *Linn. mant.* 88. *syst. ed.* 13. 478.
Leaves laciniate.]
9. *Erinus tomentosus*.
Mill. dict. n. 2.
Ageratum americanum procumbens, gnaphalii facie, floribus ad foliorum nodos. *Hoult. Mfs.*
Tomentose, stems procumbent, flowers sessile axillary.
10. *Erinus americanus*.
Mill. dict. n. 3.
A. americ. erectum spicatum, fl. purpureo. *Hoult. Mfs.*
Stem erect, leaves lanceolate opposite, flowers loosely spiked terminating.
11. *Erinus frutescens*.
Mill. dict. n. 4.
A. frutescens, fol. dentatis latioribus, villosum. *Hoult. Mfs.*

Stem upright shrubby, leaves ovate-lanceolate serrate alternate, flowers axillary.

12. *Erinus verticillatus*.
Mill. dict. n. 5.
A. amer. procumbens, fol. subrotundis ferratis glabris. *Hoult. Mfs.*
Stem branching trailing, leaves ovate serrate smooth opposite, flowers in whorls.
13. *Erinus procumbens*.
Mill. dict. n. 6.
A. amer. procumbens, glabrum, flor. luteis longis pediculis infidentibus. *Hoult. Mfs.*
Lindernia dianthera. *Swartz prodr.* 92.
Stems procumbent, leaves ovate smooth, flowers solitary axillary, peduncles longer.

DESCRIPTIONS, &c.

[Leaves mostly alternate; flowers either axillary or with one bracte to each, in a terminating spike^a.

1. Root perennial. The root-leaves form a thick tuft close to the ground, they are all linear-spatulate, pubescent, with a few serratures at the end on both sides. Leaves on the stem alternate. Stems many, very simple, a hand high, round, pubescent, upright; the side ones barren and decumbent. Flowers alternate, separated by leaves like those on the stem, but smaller, and forming an upright, simple raceme. Calyx bell-shaped, five-parted, permanent. Corolla funnel-shaped. Stigma with two small roundish opposite ears^b. Capsule small, grooved on each side, the valves when ripe bifid to the middle. Partition doubled, formed by the edges of the valves bent in. Receptacle oblong, compressed a little, not fastened to the partition. Seeds ovate, ferruginous, rugged with obscure crowded tubercles^c.]

The leaves are about half an inch long, and one-eighth of an inch broad, of a dark green. The flower-stalk is scarce two inches high; the flowers are in a loose raceme, and purple. They appear in may, or earlier, and sometimes are succeeded by ripe seeds in july.

[It is a desirable little plant for the decoration of rock-work, growing in close tufts, and producing its numerous lively purple flowers during most of the summer months^d.

Native of Germany, of the Swiss Alps, of the Pyrenees, and the South of France.—Cultivated in 1759, by Mr. Miller^e.

2. Stem herbaceous, branched, a span long, declined. Leaves opposite, sessile, obtuse. Flowers solitary, in the axils of the leaves, purple, slender.

Native of Africa; communicated by Burmann.

β. Stem herbaceous, simple, a span high, erect. Leaves opposite, sessile, acute. Flowers solitary, from the axils of the upper leaves, purple, twice as large as in the other.—Native of Africa; communicated by Gronovius^f.

3. Perennial. Stem erect, round, pubescent, two feet high. Leaves alternate, except the lower ones, which are opposite, sessile, linear, toothed, remote, pubescent. Spike terminating, oblong, imbricate with broader, ovate-lanceolate, toothed bractes. Calyx sessile, the length of the bractes, five-toothed, two-parted, upright, obtuse, broader at bottom. Corolla yellow, smelling very sweet: tube filiform, three times as long as the calyx; the five lobes of the border are cloven half way, obovate and equal: two of the anthers at the mouth of the tube, and two below the jaws. Style filiform the length of the tube^g.

Native of the Cape of Good Hope,

4. Stem simple; leaves alternate, from the axils; spike long with the flowers remote; corollas tomentose on the outside, of a dark colour, fragrant at night.

Native of the Cape of Good Hope.

This was introduced in 1776, by Messrs. Kennedy and Lee^h.

5. Native of Peru. Said also to be found at the Cape.

^a Jussieu. ^b Linn. syst. ^c Gärtn. ^d Curtis.
^e Hort. kew. ^f Linn. cliff. ^g Linn. mant. ^h Hort. kew.

6. There is no description of this or of the others.
 7. The flowers are of a dull colour, but sweet.
 All these are natives of the Cape.
 8. See *Buchnera canadensis* and *Verbena Aubletia*.]

9. Stems trailing, about six inches long. Leaves small, oval, placed on every side, very white and woolly. At the joints just above the leaves come out the flowers, sitting very close to the stems: they are white, and are succeeded by round capsules.— This plant has great resemblance at a distance to Sea Cudweed. It was sent to Mr. Miller by Dr. Houstoun from La Vera Cruz.

10. Stem upright, two feet high: towards the top two smaller branches, opposite and erect; these and the middle stalk are terminated by loose spikes of purple flowers, succeeded by oval capsules. Discovered by Dr. Houstoun at the same place.

11. Stem shrubby, about four feet high, dividing into several small hairy branches. Leaves deeply ferrate, and on pretty long foot-stalks. Flowers single, or two and three at a joint, sessile, white, succeeded by round capsules.

12. Stems many, smooth, branching out very much on every side, about seven or eight inches long and garnished with small leaves. Flowers sessile, white, making but little appearance; and succeeded by round capsules.

13. Stems several trailing six inches long, dividing into many smaller branches. Leaves opposite, ovate. Flowers bright yellow, on long slender peduncles, succeeded by oval capsules.

[This is a species of *Lindernia*, according to Swartz, and a native of Hispaniola. See *Lindernia*.]

PROPAGATION AND CULTURE.

1. This is propagated by parting the roots in autumn; they must have a shady situation and a loamy soil without dung, for in rich earth they are subject to rot.

[2. to 7. The Cape forts must be kept in the greenhouse, dry stove, or glass-case, and may be increased by cuttings.

8, &c. Those from South America must be placed in the bark-stove.] The eleventh being a shrubby plant will continue several years; but the others are annual. They are propagated by seeds; sown in pots filled with light earth, and plunged into a moderate hot-bed, where sometimes they will come up in five or six weeks; but they frequently do not vegetate till the following spring, especially when the seeds have been kept long. When the plants are fit to remove, they should be each planted in a separate small pot filled with light earth, not too rich with dung, and then plunged into the bark-pit. When they have taken new root, treat them as other plants from the same countries, by admitting proper air when the weather is warm, and frequently refreshing them with water: with this management the annual forts will flower in July and August, and often ripen their seeds in autumn, if they be brought forward early in the spring.

The shrubby fort must also frequently be refreshed with water in winter, but not in large quantities, nor in very cold weather: the plants will flower and perfect their seeds the second year.

[*ERINUS*. See *Campanula* and *Lobelia*.]

ERIOCAULON. (From *ερειον*, wool, and *καυλος*, a stalk.)
Lin. gen. n. 100. *Reich.* 106. *Schreb.* 132.
Juss. 44. *Gartn. t.* 83. *Gron. virg.* 14.

Class. 3. 3. *Triandria Trigynia*.

Nat. order of *Ensatæ*.—*Junci*. *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* common globose-depressed, imbricate.

Scales lanceolate, equal, permanent.

COR. *Universal* uniform, convex.

Proper three-petalled. *Petals* equal, lanceolate, obtuse, villose at the tip, attenuated at the base, and connected into a style-shaped pedicel which is hairy.

^a *Linn. suppl.*

STAM. *Filaments* three, capillary, sitting on the germ. *Anthems* oblong, versatile.

PIST. *Germ* slender, superior, under the stamens. *Styles* three, capillary, short. *Stigmata* simple.

PER. none. *Calyx* unchanged.

SEEDS solitary, crowned with the corolla.

REC. *Chaffs* of the size and figure of the calycine scales; one-flowered, very many.

OBS. In *Er. decangulare* the florets of the disk are male, of the circumference female.

Other species must be surveyed before the character can be completed.

Syst. Veget. p. 109. *R.*

ESSENTIAL CHARACTER.

Cal. common, an imbricate head. *Pet.* three, equal.

Stam. upon the germ.

SPECIES.

1. *Eriocaulon triangulare*.

Lin. spec. 128. *Reich.* 1. 243.

Plantaginella aurea, &c. *Breyn. cent. t.* 50. *Mor. hist.* 3. 259. *f.* 8. *t.* 16. *f.* 17.

Culm triangular, leaves ensiform, head ovate.

2. *Eriocaulon quinquangulare*.

Lin. spec. 129. *Reich.* 1. 243. *fl. zeyl. n.* 48. *Pluk. alm. t.* 221. *f.* 7.

Culm quinquangular, leaves ensiform.

3. *Eriocaulon sexangulare*.

Lin. spec. 129. *Reich.* 1. 243. *fl. zeyl. n.* 49. *Burm. ind. t.* 9. *f.* 4. *Pluk. mant.* 48. (*Gramen junceum*.)

Culm hexangular, leaves ensiform.

4. *Eriocaulon setaceum*.

Lin. spec. 129. *Reich.* 1. 244. *fl. zeyl. n.* 50. *Lour. cochinch.* 60. *Gartn. fruct.* 2. 14. *Petiv. gaz. t.* 53. *f.* 10. (*Randalia*.) *Rheed. mal.* 12. *t.* 63. *Burm. zeyl.* 109. 2. (*Gramen junceum*.) *Rumph. amb. l.* 10. *c.* 13. *t.* 7. *f.* 1.

Culm hexangular, leaves setaceous.

5. *Eriocaulon decangulare*.

Lin. spec. 129. *syst.* 128. *Reich.* 1. 244. *mant.* 327. *Pluk. amalib. t.* 409. *f.* 5. *Petiv. gaz. t.* 6. *f.* 2. (*Randalia*.) *Gron. virg.* 13. (*Globularia affinis*.)

Culm decangular, leaves ensiform.

6. *Eriocaulon quadrangulare*.

Lour. cochinch. 60.

Culm quadrangular, leaves ensiform, head of flowers globular, truncate at the base.

DESCRIPTIONS, &c.

1. *Linneus* says he could not discern the floscules in *Piso's* herbarium, which is in the possession of *Burmah*.—Native of *Brasil*.

2. Native of the East Indies.

3. The leaflets surrounding the head instead of an universal calyx, are orbiculate; not, as in the foregoing, narrow.

4. This is a small annual herb, tufted and bent back in a ring. Culm very slender, four inches high, almost naked. Leaves short few, vanishing as they grow old. Heads terminating small oblong sub-acute.

Flowers aggregate, male and female in the same common, globular, chaffy receptacle. Calyx none. The male flowers have three petals to the corolla; somewhat hirsute on the outside, and six stamens: the females have six petals, and resemble the males: they have a roundish three-cornered germ and three styles. The capsule is membranaceous, diaphanous, pedicelled, three-celled, with one small, compressed, ovate, smooth seed, with a little beak at top, and of a reddish colour, in each cell: it scarcely ever opens spontaneously. According to *Loureiro*, the seeds are subtriquetrous.

The leaves are altogether setaceous. A membranaceous sheath like a spathe includes the culm at the base. The roots are dispersed in the water.

These are natives of the East Indies, and this of *Cochinchina*.

5. Leaves two, subulate, flat, channelled, jointed, Flowers in a head, with male flowers in the disk, and female in the circumference.

^a *Linn. zeyl.*

^b *Loureiro.*

^c *Gartner.*

^d *Linn. zeyl.*

The

The character of the genus remains to be examined in the other species. Hope has very well described this. The remaining species must be seen, before the character can be corrected^e.

Native of North America, in the swamps.

6. This is an annual herb, with an upright naked four-cornered culm, eight inches high. Leaves short, smooth, few. Head of flowers whitish, flat-tish at the base, with roundish scales, attenuated at bottom, one-flowered, closed. Petals two, subconcave, blunt at the tip, toothed. Seeds three ovate. Common every where in Cochinchina^f.]

ERIOCEPHALUS. (From *εριον*, wool, and *κεφαλη*, a head.)

Lin. gen. n. 994. Reich. 1078. Schreb. 1344.

Dill. elth. 110. Juss. 186. Gertn. t. 168.

Class. 19. 4. Syngenesia Polygamia Neceffaria.

Nat. order of *Compositæ Nucamentaceæ*.—*Corymbifera*. Juss.

GENERIC CHARACTER.

CAL. Common upright: scales ten, ovate, equal, converging, of which the five exterior are keeled, the interior flat.

COR. compound rayed: *corollules* hermaphrodite twice as many in the disk. Females five in the ray.

Proper of the hermaphrodite funnel-form; border five-cleft, patulous.

Of the ray ligulate, obcordate, with three-lobed, equal tips.

STAM. in the hermaphrodites. Filaments five, capillary, very short. Anther cylindric, tubular.

PIST. In the hermaphrodites. Germ very small, naked. Style simple. Stigma two-cleft, sharp.

In the females, germ ovate, naked. Style simple, Stigma acuminate, inflex.

PER. none. Calyx scarce changed.

SEED to the hermaphrodites none.

Females solitary, obovate, naked.

REC. naked, flat: or else a down of the calyx in a double row is interspersed both between the hermaphrodite and female floscules.

OBS. A compressed corpuscle adheres to the base of each calycine scale.

ESSENTIAL CHARACTER.

Recept. subvillose. Down none. Cal. ten-leaved, equal. In the ray five floscules.

SPECIES.

1. *Eriocephalus africanus*. Cluster-leaved *Eriocephalus*. Lin. spec. 1310. Reich. 3. 938. Hort. cliff. 424. Dill. elth. 132. t. 110. f. 134. Waltb. hort. 1. t. 1. (Abrotanum).

Leaves entire and divided, flowers corymbd.

- [2. *Eriocephalus racemosus*. Silvery-leaved *Erioceph.* Lin. spec. 1311. Reich. 3. 939. aman. 6. afr. 87. Gertn. fruct. 2. 428. Raii suppl. 233. (Abrotanum).

Leaves linear undivided, flowers racemed.]

DESCRIPTIONS, &c.

1. This plant has a shrubby stalk from four to six feet high, putting out many side branches the whole length. Leaves woolly, coming out in clusters, some taper and entire, others divided into three or five parts, which spread open like a hand; they have a strong smell when bruised approaching to that of Lavendar Cotton, but not quite so rank. The flowers are produced in small clusters at the ends of the branches, and stand erect. The female florets which compose the ray form a hollow, in the middle of which the hermaphrodite florets forming the disk are situated: the border is white, with a little reddish cast on the inside, and the disk is of a purplish colour. The flowers appear in autumn, but do not produce seeds in this country.

[Cultivated in 1732, by James Sherard, M.D. at Eltham. It flowers from january to march^g.

2. This has the stature and appearance of *E. africanus*, but all the leaves are undivided: flowers on pedicels shorter than the calyx: outer scales of the calyx four, ovate, subtomentose, with a very soft wool from the bosom of them^h.

^e Linn. syst. ^f Loureiro; ^g Hort. kew. ^h Linn. amoen.

Gærtner affirms, that there is no vestige whatever of the outer calyx in this species. The receptacle is flat, and has a copious silky down on it, of a whitish straw-colour, and longer than the florets. Seeds of the females oblong, narrowed downwards, compressed-three-sided, hairy or sparingly woolly, but otherwise destitute of all down.

This was cultivated by Mr. Miller in 1758. It flowers in march and aprilⁱ.

Both are natives of the Cape of Good Hope.]

PROPAGATION AND CULTURE.

1. This plant is propagated by cuttings, which may be planted any time from may to the middle of august, for if they are planted later in the season, there will not be time for them to get good root before the winter; these cuttings should be planted in small pots filled with light earth, and plunged into a very moderate hot-bed, where they should be shaded from the sun till they have taken root; these must be refreshed with water two or three times a week, but they should not have too much at each time, for much moisture is very hurtful to these plants. When the cuttings have taken root, they should be gradually inured to the open air, to prevent their shoots from being drawn up weak; afterward, they should be removed into the open air, and placed in a sheltered situation, where they may remain till october, when they must be removed into an airy glass-case, that they may have as much sun as possible, and enjoy the free air in mild weather, but secured from frost and damp air, either of which will soon destroy them. During the winter they must be sparingly watered, for the reason before given; but, in the summer, when the plants are placed in the open air, they will require to be frequently refreshed with water in hot weather.

These plants retaining their leaves all the year, add to the variety of exotics in the winter season.

[ERIOCEPHALUS. See *Erica Bruniades*, *Centaurea*, and *Hippia*.

ERIOPHOROS. See *Rombax*.

ERIOPHORUM. (From *εριον*, wool, and *φορεω*, to bear; wool or cotton-bearing; the seeds having a long, white, downy substance affixed to them.)

Lin. gen. n. 68. Reich. 74. Schreb. n. 95.

Gertn. t. 2. Juss. 27. Linagrostis. Mich. 31.

Tourn.

Class. 3. 1. Triandria Monogynia.

Nat. order of *Calamariæ*.—*Cyperoideæ*. Juss.

GENERIC CHARACTER.

CAL. Spike on all sides imbricate: scales ovate-oblong, flat-inflexed, membranaceous, loose, sharp-pointed, separating the flowers.

COR. none.

STAM. Filaments three, capillary. Anthers upright, oblong.

PIST. Germ very small. Style filiform, length of the calycine scales. Stigmas three, longer than the style, bent backwards.

PER. none.

SEED three-sided, acuminate, furnished with villose hairs longer than the spike.

OBS. Some species are polygamous.

ESSENTIAL CHARACTER.

Glumes chaffy, imbricate every way. Cor. none. Seed one, surrounded with a very long wool.

SPECIES.

1. *Eriophorum vaginatum*. Mountain or single-spiked Cotton-grass.

Lin. spec. 76. Reich. 1. 142. fl. lapp. n. 23. suec.

n. 50. Hudf. angl. 22. With. 52. Curtis

lond. 4. 10. Lighf. 90. Hall. belv. n. 1332.

Pollich pal. n. 51. Krock. files. n. 80. Fl. dan.

t. 236.

Linagrostis vaginata. Scop. carn. n. 64.

L. spica singulari. Tourn. par. ed. engl. p. 84.

ⁱ Hort. kew.

- Juncus alpinus capitulo lanuginoso* f. *Schoenolagurus*. *Baub. pin.* 12. *prodr.* 23. *theat.* 188. *Scheuch. agr.* 302. t. 7. f. 1, 2, 3. *Rudb. elyf.* 1. 108. f. 1. *Reliqu. Rudb.* 29.
- J. alp. cum cauda leporina*. *Baub. hist.* 2. 514. 2. *Raii syn.* 436. *hist.* 1306.
- Gramen tomentosum alpinum & minus*. *Baub. pin.* 5. *prodr.* 10. *Rudb. elyf.* 1. 36. f. 3.
- Gramen juncoides lanatum alterum danicum*. *Park. theat.* 1271.—1272, 1, 2, 5. *Mor. hist.* 3. 224. f. 8. t. 9. f. 6.
- Culms sheathed round, spike scariose.*
2. *Eriophorum polystachion*. *Many-spiked Cotton-G.* *Lin. spec.* 76. *Reich.* 1. 143. *Fl. lapp.* n. 22. *suec.* n. 49. *hort. cliff.* 22. *Hall. helv.* n. 1331. *Leers herborn.* n. 37. t. 1. f. 5. *Krock. files.* n. 81. *Gertn. fruct.* 10.
- Linagrostis polystachya*. *Scop. carn.* n. 66.
- L. panicula ampliore*. *Vaill. par.* t. 16. f. 2. (good). *Scheuch. agr.* 306. *Dill. giff.* 48.
- Linagrostis*. *Tabern. hist.* 559.
- Gramen pratense tomentosum panicula sparfa*. *Baub. pin.* 4. *theat.* 61. *Rudb. elyf.* 1. 36. f. 2.
- G. tomentarium*. *Tabern. ic.* 230. *Ger.* 27. 1.
- Gnaphalium Tragi.* (683) f. *Juncus bombycinus*. *Baub. hist.* 2. 514. 1.
- Culms columnar, leaves flat, spikes peduncled.*
3. *Eriophorum angustifolium*. *Narrow-leav. Cotton-G.* *Dicks. in Linn. trans.* 2. 289. *Hoffm. fl. Deutschl.* p. 19. *Vaill. par.* t. 16. f. 1. (*Linagrostis panicula majore*.)
- E. polystachion*. *Huds. angl.* 21. *Witber. arr.* 53. *Curt. lond.* 4. t. 9. *Relh. cant.* n. 39. *Pollich pal.* n. 52.
- Linagrostis*. *Tabern. Raii syn.* 435.
- Gramen tomentarium*. *Tabern. ic.* 230. *Ger. emac.* t. 29. f. 1. *Raii hist.* 1306. 1.
- Gramen eriophorum*. *Dod. pempt.* 562. 2.
- Culms columnar, leaves channelled-three-sided, spikes peduncled.*
4. *Eriophorum virginicum*. *Lin. spec.* 77. *Reich.* 1. 143. *Gron. virg.* 11.—132. *Pluk. alm.* t. 299. f. 4. *Mor. hist.* f. 8. t. 9. f. 2. (*Gramen tomentosum*).
- Culms leafy, columnar, leaves flat, spikes upright.*
5. *Eriophorum cyperinum*. *Lin. spec.* 77. *Reich.* 1. 143. *Gron. virg.* 12. (*Scirpus*). *Pluk. mant.* t. 419. f. 3. *Raii suppl.* 620. 13. (*Cyperus*).
- Culms columnar leafy, panicle superdecompound proli-ferous, spicules mostly in threes.*
6. *Eriophorum alpinum*. *Lin. spec.* 77. *Reich.* 1. 144. *Fl. lapp.* n. 24. *suec.* 51. *Hall. helv.* n. 1333. *Krock. files.* n. 82. t. 17. *Fl. dan.* t. 620.
- Linagrostis alpina*. *Scop. carn.* n. 65. *Mich. gen.* 54.
- L. juncea alp. capitulo parvo, tomento rariore*. *Scheuch. agr.* 305. t. 7. f. 4. *Hall. app.* 1. t. 8.
- Juncus alp. bombycinus*. *Baub. pin.* 12. *prodr.* 23. *theatr.* 188. *Baub. hist.* 2. 515.
- Culms naked three-cornered, spike shorter than the down.*

DESCRIPTIONS, &c.

Root perennial. Culm cylindric. Leaves linear. Allied to the grasses.

1. Root-leaves obscurely three-cornered, sharp, streaked on two sides; convex on one side, flat on two sides. Scape twice as long as the leaves, flattish on one side, streaked. Stem-leaves awnless, sheathing; sheath swelling a little; the uppermost purple at the base. Spike ovate, imbricate on every side with membranaceous brown scales; the lower ones barren, the upper ones woolly-fruit-bearing^a.

It differs very obviously from the third species: the root being not creeping but more matted; the leaves much finer, and consequently more apt to grow in tufts; the sheath of the upper stem-leaf in particular is remarkably inflated, and it never produces more than one spike, which is upright^b.

^a Linn. suec.

^b Curtis,

Native of bogs in cold barren situations, in many parts of Europe. Not so general with us, but in some places equally common. Near London on Shirley-common by Croydon; near Lynn; Birmingham-heath. Frequent in all the northern counties; Elsemere-meers in Shropshire; Pillinmoss in Lancashire.

It flowers somewhat earlier than the *angustifolium*, but produces its down about the same time^c.

Sheep are very fond of it, whence in Westmoreland they call it *Moss-crops*^d. As they do also the third species, not distinguishing them.—Ray calls it *Hair's-tail Rush*.

2. Linneus confounds this and the next species together; and refers to the first figure of Vaillant only as a variety of his *polystachyon*: but if he had ever seen both plants together, he would doubtless have made them distinct species. The following particulars may serve to show in what our plant differs from *E. polystachyon*. 1. The root of that is not creeping. 2. The culm is very erect. 3. The leaves are short and flat. 4. The spikes are many, upon slender foot-stalks, and pendulous. 5. The involucre is shorter than the spike^e.

3. Our English writers have followed Linneus in confounding this with the foregoing; till Mr. Dickson distinguished them.

Stem from nine inches to a foot or more in height, upright, smooth, with two joints projecting a little, covered throughout its whole length with the sheaths of the leaves. Those next the root are of a chestnut colour, short, lanceolate, streaked, marked with transverse lines, which give them a reticulated appearance: the succeeding leaves at their base closely embracing the stalk, from two to three lines in breadth, about seven inches or more in length, gradually tapering to the extremity, convex on one side, concave on the other, and smooth; the uppermost leaves flatter, much shorter, and manifestly keeled; sheaths nearly of an equal thickness throughout, where a leaf goes off more loosely connected; and marked with a fissure filled by a membrane. Floral-leaves three or four, of unequal lengths, forming sheaths at bottom, terminate the stalk, from the axils of which the spikelets proceed. These are from two to seven (generally about three), ovate, first upright, afterwards pendulous^f.

Gartner describes the fruit as a small coriaceous-crustaceous nut, of an obovate form, three-cornered, smooth or obscurely streaked, of a reddish chestnut colour, one-celled, valveless, clothed at the base with a white silky down, quite simple, and twelve times as long as the nut. Seed single, sub-elliptic, obscurely three-cornered, pale.

In Germany, and the more northern parts of Europe, the down has been manufactured into various articles of dress, paper, and wicks for candles. In some parts of Sweden the peasants stuff their pillows with it, whence it is called *Poor-man's Pillow*: but it becomes brittle when quite dry.

Early in the spring cattle crop the leaves, before the grasses are sufficiently grown.

It is common on moors and boggy ground; in-
fomuch that they are often white all over with it in
june and july, when it is in seed. It flowers in april
and may.

4. Culms compressed. Spike compact, leafy, large, brown or gold-coloured.—Native of Virginia.

5. This has altogether the stature of *Cyperus*, but the spikelet of *Scirpus*, except that the seeds as they ripen produce a dun-coloured or testaceous cotton, scarcely longer than the spikelets^g.—Native of North America.

6. Thick tufts of culms and leaves rise from the root. Culms without knots very slender, three-cornered, round in drawing the fingers from the top downwards, a hand or half a foot in height, involved at the base in sheaths gradually larger, acuminate, the lower shorter and brown, the rest green.

^c Curtis. ^d Ray syn. ^e Dickson. ^f Curtis. ^g Lin. spec.

Leaves very slender, almost setaceous, three-cornered, rough backwards, almost of the same length with the culm. Spikelet erect, having no sheaths, the least of all the species, swelling, only one or two lines in length, pale yellowish brown, with white hairs much longer than the spikelet, which is made up of lanceolate, acuminate, imbricate glumes, the lowest longer and broader than the rest, divided by a nerve that stands out and is extended into a point. Seed very small, yellowish^b.

Native of the mountains of Lapland, Sweden, Denmark, Silesia, Carniola, Switzerland. Flowering in June and July.—It was found by Mr. Brown and Mr. Donn, in a moss about three miles east of Forfar, in the shire of Angus, Scotland. A specimen of it from this place was presented to the Linnean Society by Mr. Teasdale, April the 3d, 1792.

PROPAGATION AND CULTURE.

These being bog plants, are seldom preserved in gardens. They may however be planted in pots filled with bog earth, set in pans wherein water is kept constantly; or by the side of ponds or other waters.

ERIOPHORUS. See *Andryala*, *Bombax*, *Carduus*, *Scilla*.

ERIOPIA. See *Duroia*.

ERISITHALES. See *Cnicus*.

ERITHALIS. (*Εριθάλις* or *Εριθάλης*, the name of an herb in Pliny (l. 25. c. 13.) from *εριθάλης* or *εριθάλλης*, full of verdure.)

Lin. gen. n. 238. Reich. 255. Schreb. 324. Brown. t. 17. f. 3. Gærtn. t. 26. Juss. 206.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Rubiaceæ* Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, superior, pitcher-form, five-toothed, permanent, (ten-toothed, minute, five-cornered, Sw.)

COR. one-petalled, five-parted: tube very short; divisions lance-shaped, long, bent back. (Petals five, linear, obtuse, patulous, Sw.)

STAM. Filaments five, (six, eight, ten, from the base of the calyx, Sw.) subulate, patulous, scarce the length of the corolla. Anthers oblong, linear, erect, Sw.)

PIST. Germ inferior, roundish. Style filiform, compressed above, length of the stamens. Stigma sharp, (bifid, Sw.)

PER. Berry globose, crowned, ten-celled, (eight or ten-celled, G. slightly ten-grooved, Sw.)

SEEDS small, (in each cell one, pendulous, ovate, compressed like a lens, G.)

ESSENTIAL CHARACTER.

Cor. five-parted, with the divisions bent back. Cal. pitcher-shaped. Berry ten-celled, inferior.

SPECIES.

1. *Erithalis fruticosa*.

Lin. spec. 251. syst. 218. Reich. 1. 488. Gærtn. fruct. 1. 129. Jacqu. amer. pict. 39. t. 260. f. 20. Brown. jam. 165. t. 17. f. 3. Plum. ic. t. 249. f. 2. (Sambucus).

E. odorifera. Jacqu. amer. 72. t. 173. f. 23. Leaves opposite; corymbs compound.

2. *Erithalis polygama*.

Forst. fl. austral. n. 101.

β. *Timonius*. Rumph. amb. 3. 216. t. 140.

Leaves obovate; flowers axillary, males cymed, hermaphrodites solitary.

DESCRIPTIONS, &c.

1. This is an upright elegant branching tree, fifteen feet in height. Leaves subovate, blunt with a small point, shining, quite entire, deep green, paler underneath, petioled, three inches long. Racemes compound, corymbed, axillary, opposite. Flowers numerous, caducous, with white petals, mostly six-stamened with a six-cleft calyx and corolla, smelling exactly like the common *Syringa*. Berries small and purple, (black, Swartz.) Seeds about nine, but uncertain in their number; (in each cell one, ru-

^b Krocken.

fescent, Gærtner). Perhaps both the species of Browne are but varieties of this.

Native of Jamaica, Martinico, &c.¹

Jacquin describes another, which is a native of Curaçao, and probably a variety of this arising from its growing in the clefts of rocks, where there is no earth. It is a shrub, two feet high, with procumbent diffused branches; the leaves are thicker and numerous; the berry and flowers smaller; the former entirely void of scent, the latter whitish or very seldom purple.

According to Swartz, it varies with large ovate leaves, and all the parts larger.

The berry, as Gærtner observes, may with Jacquin be considered as one-celled.

2. Native of the Society Isles. The variety has narrower leaves^k.

ERITHRÆA. See *Gentiana Centaurium*.

ERNODEA. (From *ερνώδης*, ramifusus, branched. So named by Swartz.)

Lin. gen. Schreb. n. 1718. 2. p. 788. Swartz prodr. 29.

Class. 4. 1. Tetrandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth four-parted, small, superior; segments erect, acute, equal, permanent.

COR. one-petalled, falver-shaped: tube four-cornered, elongated: border four-parted; segments lanceolate, revolute.

STAM. Filaments four, inserted in the middle of the tube, awl-shaped, longer than the corolla. Anthers erect, acuminate.

PIST. Germ four-cornered, inferior. Style filiform, longer than the stamens. Stigma obtuse, emarginate.

PER. Berry roundish, crowned by the calyx, two-grooved, two-celled.

SEEDS solitary, hemispherical, striated.

Obs. Allied to *Spermacoce*.

ESSENTIAL CHARACTER.

Cal. four-parted. Cor. one-petalled, falver-shaped.

Berry two-celled. Seeds solitary.

SPECIES.

1. *Ernodea littoralis*.

Swartz prodr. 29. Vahl symb. 2. 28.

Knoxia. Brown. jam. 140. 1.

Thymelæa. Sloan. jam. 2. 93. t. 189. f. 1, 2.

DESCRIPTION, &c.

Branches four-cornered, wand-like, jointed, ash-coloured, leafless; branches alternate, two inches long. Leaves on the branchlets opposite, sessile, an inch and half long, lanceolate, attenuate to both ends, veinless, obscurely three-nerved or five-nerved, very smooth on both sides, shining, quite entire, mucronate, cusped. Stipules surrounding the branch, truncate, ciliate. Flowers axillary, opposite, sessile. Calyx deeply four-parted, with lanceolate cusped segments. Tube of the corolla slender, longer than the calyx; segments of the border linear obtuse. Stamens the length of the corolla. Stigma truncate.

It varies with broader and narrower leaves^l.

Native of Jamaica, frequent near the shore in the parish of St. George, running three or four feet or more along the ground, throwing out a few spreading branches as it creeps along. The leaves are oblong, pointed and stiff; the flowers few, single, at the axils of the upper leaves^m.

Browne named this plant *Knoxia*, as I presume, from Knox, who resided many years in the island of Ceylon, and published an account of it.]

ERYNGIUM. (*Ερυγγιον*, derivation unknown. That from *ερυγη* or *ερυγγος* *ruetus* is too silly to be repeated.)

Engl. *Eryngo*. Fr. *Panicaut*.

Lin. gen. 324. Reich. 354. Schreb. n. 456.

Tourn. 173. Gærtn. t. 20. Juss. 256.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Umbellatæ* or *Umbelliferae*.

¹ Jacquin.

^k Forster.

^l Vahl.

^m Browne.

GENERIC CHARACTER.

CAL. Receptacle common conic, chaffs separating the sessile floscules.

Involucre of the receptacle many-leaved, flat, exceeding the floscules.

Perianth proper five-leaved, upright, sharp, exceeding the corolla, seated on the germ.

COR. universal uniform, roundish: floscules all fertile.

Proper five-petalled. Petals oblong, the tips bent inwards to the base, straitened longitudinally by a line.

STAM. Filaments five, capillary, straight, exceeding the floscules. Anthers oblong.

PIST. Germ hispid, inferior. Styles two, filiform, straight, length of the stamens. Stigmas simple.

PER. Fruit ovate, divisible in two directions.

SEEDS oblong, columnar.

OBS. In some species the seeds are deposited from the crust of the pericarp, in others they remain included in it.

ESSENTIAL CHARACTER.

Flowers in a head. Recept. chaffy.

SPECIES.

1. *Eryngium foetidum*. Stinking Eryngo.
Lin. spec. 336. syst. 270. Reich. 1. 647. Gron. virg. 30. Brown. jam. 185. Herm. lugdb. 236. t. 237. Sloan. jam. 1. 264. t. 156. f. 3, 4.
Root-leaves lanceolate serrate, floral leaves multifid, stem dichotomous.
2. *Eryngium aquaticum*. Marsh Eryngo.
Lin. spec. 336. syst. 271. Reich. 3. 648. hort. cliff. 88. Gron. virg. 146. Pluk. alm. t. 175. f. 4. Raii suppl. 239. 5. Mor. hist. 3. 167. f. 7. t. 37. f. 21.
β. Pluk. alm. t. 369. f. 3.
Leaves gladiate serrate-spinous, floral leaves undivided.
3. *Eryngium planum*. Flat-leaved Eryngo.
Lin. spec. 336. Reich. 1. 648. hort. cliff. 87. upf. 37. Jacqu. austr. 4. 48. t. 391. Krock. files. n. 395. Camer. epit. 449.
E. latifolium planum. Baub. pin. 386. Mor. t. 35. f. 9.—capit. rotundo parvo. Baub. hist. 3. 88. f. 1.
E. pannonicum latif. Clus. hist. 2. 158.—f. montanum. Park. parad. 330. 3. Raii hist. 385.
Root-leaves oval flat crenate, heads peduncled.
4. *Eryngium pusillum*. Dwarf Eryngo.
Lin. spec. 337. Reich. 1. 649. hort. cliff. 87.
E. planum minus. Baub. pin. 386. Park. theat. 986. f. 3.
E. pusillum planum. Clus. hist. 2. 158. Baub. hist. 3. 87. f. 2. Raii hist. 385. Ger. emac. 1165. 5.
Root-leaves oblong gashed, stem dichotomous, heads sessile.
- [5. *Eryngium tricuspdatum*. Trifid Eryngo.
Lin. spec. 337. Reich. 1. 649. amæn. 2. 405. Gron. orient. 76. Mor. 166. t. 37. f. 13. Bocc. sic. 80. Raii hist. 386. 8.
Root-leaves cordate, stem-leaves palmate with ears bent back, chaffs three-cusped.]
6. *Eryngium maritimum*. Sea Eryngo or Sea-holly.
Lin. spec. 337. Reich. 1. 649. hort. cliff. 87. fl. suec. n. 233. Hudf. angl. 109. With. 264. Lightf. 153. Woodv. med. bot. 281. t. 102. Scop. carn. n. 302. Fl. dan. 875. Blackw. 297. 1. Mor. t. 36. f. 6. Baub. pin. 386.
E. maritimum. Clus. hist. 2. 169. Camer. epit. 448. Matth. 680. Dod. 730. 1. Lob. obs. 490. 1. Ger. 999. 1. emac. 1162. 1. Park. theat. 986. 1. Petiv. brit. 999. 1. Baub. hist. 3. 86. 2. Raii hist. 384. syn. 222.
Root-leaves roundish plaited spiny, heads peduncled, chaffs three-cusped.
7. *Eryngium campestre*. Field Eryngo.
Lin. spec. 337. syst. 271. Reich. 1. 649. hort. cliff. 87. mat. med. 76. Hudf. angl. 110. With. 264. Sowerby engl. bot. t. 57. Hall. belv. n. 735. Scop. carn. n. 301. Pollich pal. n. 263. Jacqu. austr. 2. t. 155. Fl. dan. t. 554. Plenck, ic. t. 173. Blackw. t. 297. 2. Allion. pedem. n. 1285. Krock. files. n. 394. Villars dauph.

2. 658. Gært. fruct. 77. Dod. 730. 2. Fuchs.

296. Matth. 679. Lob. obs. 490. 2. Trag. 871.

Eryngium. Camer. epit. 447.

E. vulgare. Baub. pin. 386. Baub. hist. 3. 83.

Raii hist. 384. syn. 222. Mor. t. 36. f. 1.

E. campestre vulg. Clus. hist. 2. 157.

E. mediterraneum. Ger. 999. 2. emac. 1162. 2.

f. campestre. Park. theat. 986. 2.

Root-leaves stem-clasping pinnate-lanceolate.

8. *Eryngium amethystinum*. Amethystine Eryngo.

Lin. spec. 337. syst. 271. Reich. 1. 650.

E. montanum amethyst. Baub. pin. 386. Mor. 165.

t. 35. f. 2.

E. caeruleum. Baub. hist. 3. 86. f. 1. Raii hist. 384.

Best. eyf. o. 11. t. 8. f. 4.

β. E. minus trifidum hispanicum. Barrel. ic. 36.

Bocc. mus. t. 71.

Root-leaves trifid subpinnate at the base.

9. *Eryngium triquetrum*.

Vahl symb. 2. 46.

Root-leaves trifid, stem very much branched, peduncles three-sided, involucre three-leaved keeled.

10. *Eryngium alpinum*. Alpine Eryngo.

Lin. spec. 237. Vahl symb. 2. 46. Hall. belv.

n. 736. Scop. carn. n. 300. Villars dauph. 2.

659. Allion. pedem. n. 1284. Jacqu. ic.

E. alpinum caeruleum capitulis dipfaci. Baub. pin.

386. Mor. t. 35. f. 10.

E. aliud montanum. Dalech. hist. 1460.

E. caeruleum genevense, &c. Lob. ic. 2. 23. adv.

375.

E. alp. latis foliis magnis capite oblongo caeruleo.

Baub. hist. 3. 88. 2. Raii hist. 386.

Root-leaves heart-shaped, stem-leaves ternate gashed, involucre spiny-pinnate ciliate.

11. *Eryngium Bourgati*. Cut-leaved Eryngo.

Gouan illustr. 7. t. 3. Vahl symb. 2. 47.

E. alpinum. Lin. mant. 349. syst. 271.

E. pallescens. Mill. dict. n. 5.

E. spinalba. Villars dauph. 2. 660. t. 15.

Spina alba. Dalech. hist. 1462.

E. alpinum spinis horridum dipfaci capitulo longiore.

Tournef. inst. 327. Raii suppl. 240. ext. 368.

Root and stem-leaves alternate and three-parted, twice trifid; involucre awl-shaped, many-leaved somewhat spiny.

DESCRIPTION, &c.

[These plants have somewhat the appearance of Thistles. The leaves are often spinous, as are also the involucre. The umbellets in some are inclosed in an involucre, which is often irregular and branched; in others they are dispersed*.

1. Root annual or biennial. Root-leaves bluntish, the ferratures terminating in harmless spines. Stem a foot high or more, green, somewhat angular, dichotomous, spreading; with the extreme branches flexuose. The leaves on the branches opposite, stem-clasping, wedge-shaped, subconnate, with the edge toothed and semitrifid; the divisions lanceolate, all the angles terminating in a purplish spine. The peduncle springs from the angles of the stem; it is straight, shorter than the internode, triangular, streaked on the sides. The involucre is composed of six leaflets or thereabouts; they are horizontal and longer than the flower; the leaflets are lanceolate, nerved, and have a spine at the tip and at one or two of the ferratures. Common receptacle cylindrical, whence the flower is cylindrical. Calyx of the florets five-toothed, the length of the corollet. Petals five, whitish, involute. Filaments double the length of the petals, white: anthers testaceous. Style two-parted, permanent. Seeds covered on all sides with hemispheric dots. Chaffs linear, sharp, the length of the florets. The whole plant is exceeding stinking^b:—or rather, has a very penetrating, strong, though not very unsavoury smell^c.]

The lower leaves are six or seven inches long, narrow at the base, and enlarging upwards to an inch in breadth near the top, where they are rounded off on one side like a scymitar, they are finely ser-

* Jussieu.

b Linn. syst.

c Sloane.

rate, and of a light green colour. The flowers are produced in small sessile heads, coming out at every division of the stalks, and at the ends of the branches; they are of a dull white colour, and make little appearance. They appear in June and July, and the seeds ripen in autumn. [According to the Kew catalogue, this plant flowers from August to October.]

It is a native of the West Indies, Mexico, Surinam and Virginia.—Cultivated here in 1714; by the Dutchess of Beaufort^d.

All parts of the plant are reckoned very powerful antihysterics, and much used by the negroes and poorer whites, on all occasions of that nature; whence they call it *Fittweed*. It is chiefly administered in decoctions or infusions^e.]

2. This has a perennial root, from which arise several long leaves, disposed round the root, like those of the Aloe or Yucca; they are of a gray colour, a foot long or more, and one inch and a half broad, stiff, and ending in spines. The stem is strong, two feet high, and divides at top into several peduncles, each terminated by an oval head blue. They come out in July, but unless the season of flowers, which are white, with a little cast of pale is very warm, the seeds will not ripen in England.

[It has the appearance and leaves of a small Bromelia, but is ciliate with capillary flexible soft spines. The chaffs of the flowers are larger. The involucre and chaffs quite entire^f.]

It grows naturally in Virginia and Carolina, where it is called Rattlesnake Weed, from its use in curing the bite of that venomous reptile.

[Introduced before 1699, by the Rev. John Banister; and cultivated in the botanic garden at Oxford^g.]

3. Root perennial. Stem upright, round, furrowed or streaked, whitish, about a foot and half in height, blueish at top, where it divides into three parts, each of which is terminated by a peduncled axillary flower. Lower leaves cordate-ovate, obtuse, on long petioles, with unequal, mucronate notches about the edge; stem-leaves sessile; the uppermost lobed, gashed, smaller, serrate, the notches spinulose. Flowers in terminating heads, fenced with a six-leaved involucre, spreading and reflex, the leaflets long-lanceolate, mucronate, as long as the flowers. Germ slightly angular. Calyx permanent, green with the edges and middle line silvery. Seeds flat on one side, convex on the other, hispid crowned with the calyx^h.]

It makes a pretty appearance when in flower, which is in July; especially that with blue stalks and flowers, for there is a variety in which they are white, with the leaves of a lighter green. As this plant does not spread at the root, it should be allowed a place in the pleasure-ground.

[Cultivated in 1596 by Gerardeⁱ.

Native of Austria, Silesia, Poland, Russia.]

4. This puts out oblong plane leaves from the root, which are cut on their edges; the stalks rise about a foot high, and branch out into many forked divisions, which are regular, and have a small head of flowers in each, sitting very close between the branches: these having no great beauty it is seldom cultivated except in botanic gardens.

[It flowers from June to August.—Native of Spain and the Levant.

Clusius first observed it in the garden of John Mouton, of Tournay, a learned apothecary, very skilful in botany; and thence named it *E. pusillum planum Moutoni*.—Cultivated in 1759 by Mr. Miller^k.

5. Root biennial, tuberous, approaching to the shape of the Radish. Leaves, when they first come out, smooth, round, undivided, but jagged about the edge, hanging on very long petioles, slender as hairs. Stem a foot high, with spiny heads at the top and in the axils, somewhat like those of Psyllium or Fleawort Plantain, with purple florets in them.

Involucres of long, narrow, hard, prickly leaflets, much longer than in the common sort^l.

Native of Spain, Sicily, and the Levant. Introduced in 1786, by Monf. Vaire^m.]

6. Root creeping, and running deep into the ground. Leaves roundish, stiff, gray, set with sharp spines on the edges. Stems a foot high, branched, smooth, having at each joint leaves of the same form with the lower ones, but smaller.

[The root-leaves and lower stem-leaves are on broad clasping petioles, deeply divided into three lobes, which are plaited; the upper leaves are sessile and stem-claspingⁿ.]

The flowers come out at the ends of the branches in roundish prickly heads, and are of a whitish blue colour; under each head is a range of narrow, stiff, prickly leaves, spreading like the rays of a star. The flowers appear in July.

[By old English writers it is called Sea Holly, Sea Holme, and Sea Hulver.]. It grows in great plenty on the sandy and gravelly shores, in many parts of Britain and other countries of Europe.

[The young flowering-shoots eaten like Asparagus are very grateful and nourishing^o.

The leaves are sweetish, with a slight aromatic warmth and pungency. The roots are supposed to have the same aphrodisiac virtues as the Orchis tribe. They are kept in the shops candied^p; and are still regarded by the Arabs as an excellent restorative.

7. Root perennial and strong. The whole plant very stiff and pale green. Root-leaves and lower stem-leaves on long broad petioles, which embrace the stem, variously divided, doubly and trebly pinnatifid; the upper leaves sessile, embracing the stem, which is long and trailing, bearing numerous heads of flowers^q. Corolla blue, sometimes white or yellowish^r. Appearing in July and August.

Native of most parts of Europe. In Britain not very common. On the coast near the ferry from Plymouth into Cornwall, near Newcastle upon Tyne; below Melling in Yorkshire. Also far inland, opposite Brookhall, near Daventry, in Northamptonshire. Gerarde cultivated it in his garden.]

8. The lower leaves are divided like the fingers of a hand, into five or six segments, which are very much cut at their extremities into many parts, and have small spines. Stem about two feet high, with smaller and more divided leaves. The upper part of the stem, and also the heads of flowers, are of the finest amethystine colour, so that they make a very fine appearance.

[Leaves linear, semitrifid, at bottom subpinnate. Involucres lanceolate, longer than the head, fenced at the base with subulate bristles interposed^s.

Native of the mountains of Styria.—Cultivated in England in 1664^t.] It flowers in July, and when the autumn proves dry, the seeds will ripen here.

[Scopoli cannot discover any other difference between this and the foregoing, except that the leaves are more gashed in the one than the other; he therefore looks upon them as one species.

β. The variety is smaller, and the involucre has trifid folioles^u.

9. Stem erect, rigid, a span or a foot in height, very much branched, round, smooth, amethystine, as are also the branches and flowers. Branches alternate, divaricate, subdichotomous, three-sided. Root-leaves copious, an inch long, on flat petioles an inch and half in length, flexible, smooth; the lateral segments oblong, gashed at the tip, having spinulose teeth; the middle segment obovate, trifid; the lobes three-toothed, spinulose. Stem-leaves three-parted, half-stem-clasping: segments lanceolate, rigid, spiny, with a spiny tooth on each side at the base. Peduncles on the side and at the end of the branches, rigid, with a three-parted leaflet at the base of each. Head small, few-flowered, sometimes subsessile. Leaflets of the involucre longer

^d Hort. kew.

^e Browne.

^f Linn. spec. and syst.

^g Mor. hist.

^h Krockner.

ⁱ Hort. kew.

^k Ibid.

^l Boccone.

^m Hort. kew.

ⁿ Woodw. Mfs.

^o Linn. fucc.

^p Withering.

^q Woodw. Mfs.

^r Wither.

^s Linn. spec.

^t Hort. kew. from Evelyn's kalendar.

^u Linn. spec.

by half than the head, lanceolate, concave, rigid, entire, ending at top in a pungent spine, without any bristles at the base of the involucre, as in *E. amethystinum*. Chaffs awl-shaped, rigid, pungent, the length of the florets.

Gathered in the dry plains of the kingdom of Tunis, by Vahl².

10. Root perennial. The leaves are cordate and toothed, the lower on long petioles, the upper stem-clasping. The lower leaves resemble those of *Calcia*, but are more acute, and the teeth end in a soft spine. Amethystine leaves surround the oblong head of flowers; some of them bristle-form and reflex, other pinnatifid and lanceolate. Corolla white. Anthers green².

It is a plant, says Villars, curious to see, on account of the beauty of the involucre, which are of a vinous azure blue, mixed with green and white, scarcely prickly; the heads of flowers are much elongated, cylindric in the lower, and suddenly rounded in the upper part. This sort has been confounded with the next by the Bauhins, and Linneus; but it has the lower leaves entire as in *E. planum*, whereas in the ensuing species they are cut to the centre. The leaves of this are simple, serrate and smooth; those on the stem trifid, and the upper or floral leaves, coloured, palmate and fringed.

Native of the mountains of Switzerland, Dauphiné and Italy.—Cultivated in 1752, by Mr. Miller².

11. Height from eight inches to a foot. Stems thick, white, strong, and branched from the bottom. The lower leaves are at first entire, and afterwards winged, toothed or a little spiny, then palmate-laciniate, sinuated, spiny or cut on the sides; at the base of each branch is a smaller leaf. Peduncles strong, solid, each supporting a single conical head, less lengthened out than in the preceding sort, but more rough like that of the Teasel. Involucre frequently composed of a double row of several rough, prickly, silvery leaves, simple or divided into three parts, longer than the flowers.—This plant is lower, rougher, thicker and more branched than the preceding; the leaves continue some years, awaiting the growth of the root necessary to produce the stem: and when the fructification is completed the whole perishes^a. The chaffs are awl-shaped, rigid, and longer than the flower^b.

Gouan, who first clearly distinguished it, says that it approaches very near to *E. tricuspidatum*, but differs from it in having the leaves digitate and biternate, but not palmate; the chaffs quite entire, not three-cusped.

Mr. Miller, who cultivated this species in 1731^c, says that] the stalks rise about two feet high, that the flowers are of a light blue colour, in very large heads, that it flowers in June and July, and that the seeds ripen here in autumn.

[Native of the South of France.]

PROPAGATION AND CULTURE.

1. As this plant is a native of hot countries, it will not thrive in England, but in a warm stove. It is propagated by seeds, which must be sown on a hot-bed; and when the plants are fit to remove, they should be each planted in a small pot, and plunged into the bark-bed, and afterwards treated like other tender plants from the same country; the second year they will produce flowers and seeds, soon after which they commonly decay.

2. This sort is propagated by seeds, which, if sown in pots and plunged into a moderate hot-bed, will come up much sooner than those which are sown in the full ground, whereby they will be much stronger before the winter. When the plants are fit to remove, they should be each planted in a separate small pot, filled with light earth; and if they are plunged into a moderate hot-bed, it will forward their taking root; then they must be gradually inured to bear the open air, into which they may be re-

moved toward the latter end of May, and placed among other hardy exotic plants. When the plants have filled these pots with their roots, some of them may be shaken out, and planted in a warm border; the others may be put into larger pots, and in the autumn placed under a common frame, where they may be exposed to the free air in mild weather, but sheltered from severe frost: the following spring these may be turned out of the pots, and planted in a warm situation, where they will endure the cold of our ordinary winters very well; and if in severe frost they are covered with Straw, Peas-haulm, or any such light covering, it will secure them from injury.

3. This is propagated by seeds, which if sown in the autumn, will more certainly succeed than when sown in the spring, for the latter commonly remain in the ground a year before they vegetate; and if the seeds are sown where the plants are to remain, they will flower stronger than those which are transplanted; for as they have long downright roots, so these are commonly broken in taking out of the ground, which greatly weakens the plants. The culture they require is to thin them where they are too near, keep them clean from weeds, and dig the ground about them every spring before they shoot.

4. Having no great beauty, it is seldom cultivated in gardens.

6. This sort will grow in a garden, if the roots are planted in a gravelly soil, and produce flowers annually; but the roots will not grow near so large or fleshy as those which grow on the sea-shore, where they are overflowed with salt water. The best time to transplant the roots is in autumn, when the leaves decay; the young roots are much better to move than the old, because being furnished with fibres, they will readily take root: when these are fixed in the ground, they should remain unremoved; and if they are kept clean from weeds, it is all the culture they will require.

7. The seventh sort is a very troublesome weed, for the roots run deep into the ground, and are not easily destroyed by the plough; they spread and multiply greatly in the ground, to the prejudice of whatever is sown or planted on the land, therefore this plant is not admitted into gardens.

The eighth, tenth, and eleventh sorts are propagated by seeds in the same manner as the third, and require the same treatment.

[ERYNGIUM. See *Atractylis*, *Gundelia*.

ERYSIMI VARIETAS. See *Sinapis*.

ERYSIMO SIMILIS. See *Turritis*.]

ERYSIMUM, (Of Pliny. *Ερυσίμου* of Theophrastus and Dioscorides. From *ερως*, *salvisco*, Lin. or *traho*, from its drawing quality—others derive it *απο του ερειχειν*, because the leaves are much cut—others from *ερίτιμον*, precious.)

Lin. gen. n. 814. Reich. 878. Schreb. 1090.

Gertn. t. 143. Tourn. 111. Juss. 239.

Class. 14. 2. Tetradynamia Siliquosa.

Nat. order of *Siliquosæ*.—*Cruciferae*, Juss. *Cruciatae*, Hall.

GENERIC CHARACTER.

CAL. Perianth four-leaved: leaflets ovate-oblong, parallel-converging, coloured, deciduous.

COR. four-petalled, cruciform. Petals oblong, flat, extremely obtuse at the tip: claws length of the calyx, upright.

Gland nectariferous double, within the shorter filament.

STAM. Filaments six, length of the calyx: of these the two opposite shorter. Anthers simple.

PIST. Germ linear, four-cornered, length of the filaments. Style very short. Stigma headed, permanent, small.

PER. Silique long, linear, strict, exactly four-cornered, two-valved, two-celled.

SEEDS very many, small, roundish.

ESSENTIAL CHARACTER.

Silique columnar with four equal sides. Cal. closed.

12 E

SPECIES.

* Symb. γ Scopoli. 2 Hort. kew. * Villars.
 b Vahl. c Hort. kew.

SPECIES.

1. *Erysimum officinale*. Common Hedge-Mustard.
Lin. spec. 922. *Reich.* 3. 260. *hort. cliff.* 337.
fl. succ. n. 598. *mat. med.* n. 824. *Huds. angl.*
286. *With.* 695. *Curtis lond.* v. 40. *Lightf.*
scot. 354. *Relb. cant.* n. 477. *Hall. belv.*
n. 478. *Pollich pal.* n. 631. *Neck. gallob.* 281.
Fl. dan. t. 560. *Krock. files.* n. 1072. *Villars*
dauph. 3. 310. *Blackw. t.* 28.
E. vulgare. *Baub. pin.* 100. *Mor. hist.* 2. f. 3. t. 3.
f. 1.—Tragi flosc. luteis, juxta muros proveniens.
Baub. hist. 2. 863.
E. Dioscoridis Lobelio. *Ger.* 198. i. *emac.* 254. i.
Sisymbrium officinale. *Crantz. austr.* 54. n. 10.
Scop. carn. n. 824. *Allion. pedem.* n. 1010.
Eruca filiqua cauli appressa Erysimum dicta. *Raii*
hist. 810. *syn.* 298. *Petiv. brit.* t. 46. f. 3.
Iris 1. *Tabern.* 448.—f. *Erysimum.* *Dod. pempt.*
714. *Lob. ic.* 206. i.—vulgare. *Park. theat.* 833.
Verbena mas. *Fuchs. hist.* 592.
Siliques pressed close to the spike, leaves runcinate.
2. *Erysimum Barbarea.* Winter Hedge-Mustard or
Cress.
Lin. spec. 922. *Reich.* 3. 260. *fl. succ.* n. 599.
hort. cliff. 338. *Huds. angl.* 286. *With.* 696.
Lightf. 355. *Relb. cant.* n. 478. *Hall. belv.*
n. 479. *Neck. gallob.* 281. *Pollich pal.* n. 632.
Allion. pedem. n. 993. *Krock. files.* n. 1073.
Villars dauph. 3. 311.
Sisymbrium Barbarea. *Crantz. austr.* 54. n. 11.
Scop. carn. n. 826.
Eruca lutea latifolia f. Barbarea. *Baub. pin.* 98. *Raii*
syn. 297. *Mor. hist.* 2. f. 3. t. 5. f. 11, 12. *Petiv.*
brit. t. 46. f. 1.
Barbarea. *Dod. pempt.* 712. *Ger.* 188. *emac.* 243.
Baub. hist. 2. 869. *Raii hist.* 809.—fl. simplici.
Park. theat. 820.—femina. *Tabern.* 452.
Leaves lyrate, the outmost lobe roundish.
3. *Erysimum Alliaria.* Stinking or Garlick Hedge-M.
Lin. spec. 922. *Reich.* 3. 260. *hort. cliff.* 328.
fl. succ. n. 600. *mat. med.* 162. *Huds. angl.* 286.
With. 696. *Curtis lond.* 2. 48. *Lightf.* 356.
Relb. cant. n. 479. *Hall. belv.* n. 480. *Neck.*
gallob. 281. *Pollich pal.* n. 633. *Allion. pedem.*
n. 994. *Krock. files.* n. 1074. *Blackw. t.* 372.
Villars dauph. 3. 311.
Alliaria. *Baub. pin.* 110. *Fuchs.* 104. *Camer.*
epit. 589. *Dod.* 666. *Ger.* 650. *emac.* 794.
Park. theat. 112. 5. *Baub. hist.* 2. 883. *Raii hist.*
792. *Petiv. brit.* t. 45. f. 1.
Sisymbrium Alliaria. *Scop. carn.* n. 825.
Hesperis Allium redolens. *Mor.* 2. 252. t. 10. f. 6.
Raii syn. 293.
Leaves cordate.
4. *Erysimum repandum.* Small-flowered Hedge-Must.
Lin. spec. 923. *Reich.* 3. 261. *amæn.* 3. 415.
Jacqu. austr. 1. 16. t. 22. *Krock. files.* n. 1078.
Allion. pedem. n. 995.
E. ramosissimum. *Crantz. austr.* 29. n. 5.
Leaves lanceolate toothed, racemes opposite to the
leaves, siliques racemed subsessile, corollas minute.]
5. *Erysimum cheiranthoides.* Treacle Hedge-Mustard,
or Wormseed.
Lin. spec. 923. *syss.* 597. *Reich.* 3. 261. *fl. lapp.*
263. *succ.* n. 601. *hort. cliff.* 337. *Huds. angl.*
287. *With.* 697. *Relb. cant.* n. 480. *Retz.*
obs. 2. n. 64. *Gertn. fruct.* 2. 297. *Hall. belv.*
n. 477. *Scop. carn.* n. 831. *Neck. gallob.* 281.
Pollich pal. n. 634. *Jacqu. austr.* 1. 16. t. 23.
Fl. dan. t. 731. *Villars dauph.* 3. 312. *Allion.*
pedem. n. 996. *Krock. files.* n. 1075.
E. tertium. *Tabern.* 449.
Myagrurn filiqua longa. *Baub. pin.* 109.
Myagro affinis planta filiquis longis. *Baub. hist.* 2.
894. 1. *Raii hist.* 811. 2. *syn.* 298. *Petiv. brit.*
t. 45. f. 2.
Camelina. *Ger. emac.* 273. 4.—*Myagrurn alterum*
thlaspi effigie. *Lob. ic.* 1. 225. 1.—amarum. *Park.*
theat. 868. 3.
Eruca sylvestris Thlaspi effigie. *Mor.* t. 5. f. 7.
Leaves lanceolate quite entire, sometimes toothed, sili-
ques patulous.

[6. *Erysimum hieracifolium.*

- Lin. spec.* 923. *Reich.* 3. 261. *fl. succ.* n. 602.
Jacqu. austr. 1. t. 73. *Retz. obs.* 2. n. 62. *Fl.*
dan. t. 229. *Pollich pal.* n. 635? *Allion. pedem.*
n. 997. *Villars dauph.* 3. 313.
E. pannonicum. *Crantz. austr.* 28.
Leucoium luteum sylvestre hieracifolium. *Baub.*
pin. 201. *prodr.* 102. *Raii hist.* 783. 4.—ferrato
fol. *Baub. hist.* 2. 873.
L. sylvestre inodorum, fl. parvo pallidior. *Raii*
hist. 781.
Leaves lanceolate ferrate.
7. *Erysimum perfoliatum.*
Crantz. fasc. 1. 27. *Krock. files.* n. 1077.
E. campestre. *Scop. carn.* n. 827.
Brassica turrita. *Weigel obs.* 32.
B. orientalis. *Pollich pal.* n. 639.
B. campestris 1. *Clus. hist.* 2. 127.
B. orientalis perfoliata fl. albo, filiqua quadrangula.
Tournef. inst.
B. campestris perfol. fl. albo. *Baub. pin.* 112.
Leaves cordate, stem-clasping, smooth.
8. *Eysimum bicorn.* Horned Hedge-Mustard.
Ait. hort. kew. 2. 394.
Leaves lanceolate hairy, siliques two-borned at the tip.

DESCRIPTIONS, &c.

1. Root annual. Stem from one to two feet high, upright, round, finely grooved, beset with numerous short, rough hairs, branched, and for the most part purplish, particularly at the angles of the branches, which spread very much. Leaves alternate, petioled, slightly downy on both sides, scabrous underneath, particularly on the midrib and nerves; pinnatifid, the segments opposite; oblong; ferrate-toothed, the end one largest and connected with the next to it. Racemes of flowers terminating, roundish; of fruits filiform, elongated, naked, pubescent. Leaflets of the calyx of a pale colour, linear-oval, bluntish, concave, pubescent. Petals of a dull yellow, wedge-shaped, veined. Anthers cordate, sharp, bent somewhat upward. Style pubescent. Stigma round, flattish, emarginate; almost the height of the stamens. Silique cylindric, finely grooved, green or purple, pubescent, pressed to the stalk; not opening spontaneously whilst on the plant. Seeds dingy yellow, obliquely truncate at both ends, immersed in the partition, and eight in each cell. Viewed as it comes into blossom, and when its flowering branches shoot out horizontally to a great length, it scarcely seems to be the same plant. It is common on dry banks, under walls, pales, and in waste places: from may or june to september^a. Besides its name of Hedge-Mustard, it has also those of *Bank Cresses* and *Scrambling Rocket*. Turner calls it *Winter Cresses*.

In German it is named *der Hederich*, *Wegeesenf*, *wilder Senf*, *falscher Wassersenf*, *das gelbe Eisenkraut*, *das Weibchen des Eisenkrauts*, *Kreuzkraut*. In Danish *Vild Senep*, *Veysenep*. In Swedish *Väggkrassa*. In French *le Velar*, *la Tortelle*, *l'herbe au Chantre*. In Italian *Erisamo*. In Spanish *Jaramago*, *hierba de San Alberto*, *Irion*. In Portuguese *Erisimo*. In Russian *Gorczyca polna* and *Pszonak ziele*.

It is warm and acrid to the taste, and when cultivated, is used as a spring potherb. Birds are fond of the seeds. Sheep and goats eat it. Cows, horses and swine refuse it.

Rondeletius cured a hoarseness occasioned by loud speaking, with this herb, in a few days^b. The juice of it is beyond any thing in diseases of the throat^c.

This and some others of the class, are apt to come up among the ashes, where charcoal has been made, or where there has been any considerable fire^d.

2. Root perennial. Stem a foot or eighteen inches high, smooth, round, deeply furrowed, much branched. Leaves smooth, dark green, having two or three pairs of roundish lobes, connected to a broad foliaceous rib; the extreme lobe much the largest, and either of an oval or blunt rhomboidal figure,

^a Curtis, Woodw. Mss. Scop. ^b Linn. succ. ^c Withering.
^d Switzer, Haller, Pollich.

slightly indented on the edges: but they vary much in form. Flowers in racemes or thick spikes at the ends of the stem and branches; peduncles compressed quadrangular. Calyx green, caducous; two of the leaflets larger, with a helmet-shaped hollow at the top. Petals yellow, much longer than the calyx. Nectary consists of four glands, two between the longer stamens, and two supporting the shorter ones. Siliques upright, parallel to the spike-stalk, with four obscure angles. Seeds roughish, finely dotted and reticulated, twenty in number, in each cell ten^c.

Banks of ditches and streams, in watery places; sometimes in cultivated fields and even on walls. It flowers from may to july. It is called *Winter Rocket* as well as *Winter Cress*: and herb *S. Barbara*. In German it is named *die Winterkresse*, *Barbenkraut*, *Barbelkraut*, *Rapunzel*, *Senskraut*, *Schnüdefens*, *Habichtskraut*, *gelber Beyfuß*, *falsche Bimion*. In Danish *Vinterkars*. In Swedish *Vinterkresse*. In French *la Barbaree*, *l'herbe Sainte Barbe*, *l'herbe aux charpentiers*, *la Julienne jaune*, *Roquette*. In Italian *Barbarea*, *erba di Santa Barbara*, *Ruchetta*. In Spanish *Hierba de Santa Barbara*, *Ruqueta*. In Portuguese *Herva de S. Barbara*.

The common people in Sweden use the leaves in salads early in the spring, and late in the autumn: they also boil them as Cale. Some also in England cultivate it for spring salad, under the name of *French* or *American Cress*; but it has to most people a bitter, unpleasant taste^f.

Varieties.

There are several varieties of Winter Cress. One is made a distinct species by Miller, under the name of *Erysimum vernum*. This is variety β. of Linneus's species plantarum and *Sisymbrium Erucae folio glabro minus* & *præcocius*, Tournef. inst. 226.—It is distinguished by Ray (hist. 809.) as having smaller leaves, more frequently sinuated, the pods thicker, and the seeds larger, paler brown inclining to white.—Petiver has figured it (t. 46. f. 2.) under the name of *Early Winter Cress*; and says that it flowers in april.

A variety with double flowers (*Barbarea flore pleno*, *Park*.) is common in the gardens, under the name of *Yellow Rocket*^g.

Villars insists that *Sisymbrium Barbarea* of Linneus, *Erysimum orientale* of Miller, n. 4. is nothing more than a variety of this.

3. Root biennial. Stem upright, from two to three feet high, round, smooth, somewhat striated, at bottom purple and slightly hairy, at top branched. The branches are few, alternate and upright. Leaves alternate, petioled, veiny and somewhat wrinkled; the lower ones on longer petioles, bluntly notched or scoloped and rounded at the end; the upper ones sharp, and even acuminate, unequally toothed: there are a few hairs at the base of the foot-stalk. Flowers in a corymb; terminating, upright, on peduncles the length of the flowers. Leaflets of the calyx pale green, obtuse, deciduous, hollow at the tip. Corolla white, petals obovate, border spreading, marked with a few veins. Nectary of four glands, two between the longer stamens, and two supporting the shorter stamens. Silique two inches long, obscurely quadrangular, with a fine prominent line between the angles. Seeds brown, shining, striated, truncate at both ends, partly buried in the partition^h.

Common by hedge sides, on banks and in shady places; flowering in april and may.—From its place of growth it has the vulgar name of *Jack by the hedge*. And having a strong smell and taste of Garlic, it is used by country people in fauces, with bread and butter, salted meat, and with lettuce in salads: hence it has another vulgar name of *Sauce alone*. In German it is called *das Knoblauchkraut*, *der Knoblauchbederich*, *Lauchel*, *Waldknoblauch*, *Ram-*

fen, *Rampen*, *Ramschelmurzel*, *Gernsel*, *Salskraut*, *Saskraut*. In Danish *Hvid løgsart*, *Gastlekaal*. In Swedish *Hvitløksört*. In French *L'Alliaire*, *l'herbe des aux*, *l'herbe aux aillots*. In Italian, Spanish and Portuguese *Alliaria*.

According to Linneus's observation, horses, sheep and swine refuse it; but kine and goats eat it. If eaten by cows, it gives a strong disagreeable taste to the milk. When it grows in poultry yards the fowls eat it, and it gives an intolerable rank taste to their fleshⁱ. The seeds excite sneezing^k.

The leaves are recommended internally, as sudorifics and deobstruents, of the nature of Garlic, but much milder; externally, as antiseptics, in gangrenes and cancerous ulcers^l.

4. Stature of *Sisymbrium polyceratum*; but the racemes are opposite to the leaves, long, and axillary; the filiques are long, filiform and angular.—Stem upright, angular. Leaves lanceolate, sharply toothed. Flowers small, pale. Stigmas very slightly emarginate, not two-lobed^m.

Annual. Native of Spain, Bohemia, Silesia, Austria, Italy. It flowers in may and june. Introduced in 1772, by Monf. Richardⁿ.

5. This has very much the air or habit of *Cheiranthus Erysimoides*, except that the flowers are smaller and the filiques patulous. The stigma in this is small and hardly divided; in the next species it is formed as it were of two divaricated knobs^o.

Root annual. Stem from one to two cubits in height, upright, stiff, streaked, rough; usually simple, sometimes branched a little; (others say, very much branched.) Leaves roughish, the midrib running down the stem, the uppermost sometimes a little toothed. Corolla small, yellow^p. Silique an inch long, rhomb-quadrangular, obscurely knobbed where the seeds lie: partition membranaceous, contrary to the valves, or certainly narrower than the filique: valves keeled on the outside at an acute angle. Receptacle between the valves, filiform, ending in the very short style with a blunt stigma. Seeds about eighteen in each cell, ovate, a little turgid, beaked, of a yellowish brown colour^q. They are as intensely bitter, as Wormseed or Coloquintida^r.

In most parts of Europe. In England not common. In the osier-holts near Ely, and on the bank of the river between the bridge and the city. In the corn fields about Eldon, and among turneps near Bungay in Suffolk. Ashburne in Derbyshire.—It flowers from may to august.

All cattle eat it. The country people give the seeds to destroy worms, with good effect; hence its name of *Treacle-Wormseed*.

6. It differs from the foregoing species; not only in having serrate leaves, but longer filiques not standing so wide from the stem, and larger flowers. It differs from *Cheiranthus erysimoides*, in having flowers of only half the size, the top of the style or the stigma emarginate indeed, but not two-lobed, and the filiques by no means tomentose, although the pistils or germs be hairy^s.

According to Villars it is much smaller than the preceding species, the stem not being more than eight inches high, simple or unbranched. The lower leaves are toothed, and resemble those of *Crepis virens*, being whitish or ash-coloured: the stem-leaves become linear. The flowers terminate the plant, and the petals are of a pale yellow. The filiques are hard, a little villose, and approximate to the stem.

He adds that it is difficult to distinguish this plant from *Cheiranthus erysimoides*, except by its cut leaves and the smallness of the flowers; and that he therefore considers them as varieties of the same species, though Linneus has inserted them in different genera.

See *Cheiranthus erysimoides*.

^c Withering, Lightfoot, Stokes in Withering, Woodw. Mfs. Lyons Mfs. in Relh. cant. Krock. ^f Linn. succ. Withering, Stokes in Withering, Lightfoot.

^g Woodw. Mfs. ^h Curtis. Woodw. Mfs. Lyons Mfs. ⁱ Curtis, Withering. ^m Linn. and Krock. ⁿ Hort. kew. ^o Linn. ^p Relhan. ^q Gärtn. ^r Gerarde and Ray. ^s Linn. succ.

According to Retzius, the root is biennial. Stems upright, stiff, sometimes branched, many-angled, smooth. Leaves alternate, smooth, very remotely toothed, by no means ferrate. Flowers in racemes, yellow, smelling faintly. Calyx greenish yellow, brown at the end. Petals almost linear, truncate. A small gland at the shorter stamens. Siliques upright, stiff, regularly quadrangular, ending in an emarginate stigma. The plant under the same name in Pollich is a different species.

Native of Sweden, Denmark, France, Germany, Austria, Italy.

7. Linneus has not this plant, and seems to have confounded it with *Brassica campestris*, from which it differs, in having a more diffused habit, a white flower, a longer silique entirely quadrangular; whereas that has the silique cylindric, loose, dry, wrinkled and veined, ending in a soft fistular horn. Annual.

Native of Germany and the Levant¹.

See *Brassica orientalis*.

8. Annual. Flowers small, yellow. Calyx yellowish, hairy on the outside. Style permanent, capillary, the length of the horns. Stigma entire. Siliques approximating, pressed close, from apical four-cornered, hairy, three or four lines long, with two horns at the end.

Native of the Canary islands. Found by Mr. Francis Masson, and introduced in 1779.—It flowers in august and september².]

PROPAGATION AND CULTURE.

In general these plants are only admitted into botanic gardens. The three first are common weeds, and will scatter their seeds wherever they are admitted so as soon to become troublesome. Most of them perish after they have ripened their seeds, but the fifth sort will abide several years in a dry lean soil, or on a wall: in rich land it soon decays. They may be all propagated by sowing their seeds in the autumn, where they are to remain; and they require no culture but to thin them, and keep them clean from weeds.

[The last species requires the protection of a green-house; all the others are hardy enough, and the second, as has already been mentioned, is cultivated by some in the kitchen garden, as a warm spring salad herb, under the name of French or American Cress. If permitted to scatter its seeds, it will come up of itself in sufficient quantity.

ERYSIMUM. See *Brassica*, *Cheiranthus*, *Sinapis*, and *Sisymbrium*.

CEREALE. See *Polygonum Fagopyrum*.]

ERYTHRINA. (From *ερυθρος*, red; the corolla being commonly scarlet.)

Lin. gen. n. 855. Reich. 926. Schreb. 1163. Juss. 356. Corallodendron. Tourn. 446.—Coral. Dill. elth. 20.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceæ* or *Leguminosæ*.

GENERIC CHARACTER.

CAL. Perianth one-leaved, entire, tubular: mouth emarginate above: beneath furnished with a melliferous pore.

COR. papilionaceous, five-petalled.

Standard lanceolate, with sides bent back, ascending, very long.

Wings somewhat ovate, scarce longer than the calyx, scarce projecting beyond the tube of the standard, very small.

Keel straight, length of the wings, two-petalled, emarginate.

STAM. Filaments ten, conjoined at the lower part, but little bent in, the length of half the standard, unequal. Anthers ten, sagittate.

PIST. Germ pedicelled, subulate, attenuated into a subulate style the length of the stamens. Stigma terminal, simple.

PER. Legume extremely long, protuberating at the seeds, terminated by a point, one-celled.

SEEDS kidney-form.

¹ Krock. fles.

² Hort. kew.

OB3. In *Er. herbacea* and *Crista galli*, the tenth stamen is distinct.

ESSENTIAL CHARACTER.

Cal. two-lobed. **Cor.** standard very long, lanceolate.

SPECIES.

1. *Erythrina herbacea*. Herbaceous Coral-tree. Lin. spec. 992. syst. 642. Reich. 3. 395. mant. 438. hort. cliff. 354. Catesb. car. t. 49. Trew. ebret. t. 58. (Corallodendron). Dill. elth. 107. t. 90. f. 106. (Coral).

Leaves ternate, stems entirely simple shrubby-annual.

2. *Erythrina carnea*. Flesh-coloured Coral-tree.

Ait. hort. kew. 3. 8.

E. americana. Mill. dict. n. 5.

Leaves ternate smooth, stem arboreous prickly, calyxes campanulate truncate.

3. *Erythrina Corallodendron*. Smooth-leaved Coral-tr.

Lin. spec. 992. syst. 642. Reich. 3. 395. hort. cliff. 354. upsl. 207. fl. zeyl. n. 275. Brown. jam. 288.

E. Corallodendron, n. 2. & spinosa. Mill. dict. n. 3.

Coral arbor americana. Comm. hort. 1. 211. t. 108.

Silique sylvestris spinosa arbor indica. Bauh. pin. 402.

β. *E. corallodendrum*. Lour. cochinch. 427.

E. orientalis. Murr. in comm. gott. 1777. 35. t. 1.

Mouricou. Rheed. mal. 6. 13. t. 7.

Gelala litorea. Rumph. amb. 2. 239. t. 76.

Boa tsinkring. Bont. jav. l. 6. c. 44. p. 135. fig.

Leaves ternate unarmed, stem arboreous prickly, calyxes truncate five-toothed.

4. *Erythrina picta*. Prickly-leaved Coral-tree.

Lin. spec. 993. Reich. 3. 396.

Gelala alba. Rumph. amb. 2. 234. t. 77. Burm. ind. 154.

Leaves ternate prickly, stem arboreous prickly.

5. *Erythrina crista-galli*. Cock's-comb Coral-tree.

Lin. syst. 642. Reich. 3. 396. mant. 99.

E. laurifolia. Jacqu. obs. 3. 1. t. 51.

Leaves ternate, petioles somewhat prickly glandular, stem arboreous unarmed.

6. *Erythrina planifolia*.

Lin. spec. 993. Reich. 3. 397. Plum. spec. 21. ic. 102. f. 1. (Corallodendron).

Leaves simple oblong.

7. *Erythrina fusca*.

Lour. cochinch. 427.

Gelala aquatica. Rumph. amb. 2. t. 78.

Leaves ternate unarmed lanceolate, banner of the corolla convolute.

DESCRIPTIONS, &c.

These are small trees prickly or unarmed, or else shrubs sometimes almost herbaceous; leaves as in *Dolichos*, ternate, stipulaceous, the petiolules jointed and awned or glandular, very seldom simple; flowers in fascicles from the axils or in spikes at the ends of the stem and branches, often scarlet³.]

1. This has a large woody root, from which fresh shoots come out every spring, growing to the height of about two feet. [They seldom throw out branches, and are sometimes perennial. The petioles are usually prickly underneath; there is commonly a prickle also under the common petiole on the stem, and sometimes but seldom a prickle or two scattered about the stem⁴.] Leaflets hastate deep green. The upper part of the stalks are terminated by a long bunch or spike of scarlet flowers. [The bunches are erect; the pedicels in threes, each sustaining one flower. Calyx undivided, without the melliferous gland at the base. Banner of the corolla deep red. Wings and keel very short. The tenth stamen distinct⁵.] Legumes five or six inches long, containing five or six scarlet seeds. This species flowers in september, but never produces seeds in England. It grows naturally in South Carolina, whence Mr. Catesby sent the seeds in the year 1724, and many plants were then raised, in several curious gardens. [It was also sent afterwards to Jussieu from the banks of the Mississippi⁶.]

³ Jussieu.

⁴ Linn.

⁵ Ibid.

⁶ Hort. cliff.

2. The seeds of this are not half so large as those of the next sort, and are of a bright scarlet colour; the leaves are also much smaller, and have long acute points; the branches are very closely armed with crooked greenish spines, as are also the ribs and foot-stalks of the leaves. The flowers grow in very long close spikes, and are of a beautiful scarlet colour.

[Cultivated in 1759, by Mr. Miller^e,] who says that he received the seeds from La Vera Cruz, and afterwards from the Cape of Good Hope.

3. This has a thick woody stem, which rises about ten or twelve feet high in this country, but where it is a native it grows to twice that height, sending out many strong irregular branches, which are covered with a brown bark. Leaves on long foot-stalks; the middle leaflet much larger than the other two; they are all heart-shaped, smooth, and of a deep green colour. The flowers come out at the ends of the branches, in short thick close spikes; they are of a deep scarlet colour, and make a fine appearance; they are commonly in beauty in May and June, but are not succeeded by pods here: in America they have thick swelling crooked pods, containing large seeds of a reddish purple colour. The leaves fall off in spring, and in autumn new leaves put forth, which continue green all the winter. The flowers do not appear till the leaves drop.

[Dr. Browne thinks it is not a native of Jamaica, but that it was introduced by the Spaniards, who planted it among their Cacao trees, where the walks were most exposed to the weather, in order to break the force of the winds, whence it acquired the appellation of *Mader di Cocco*, among them.—In Jamaica it is called the *Coral* or *Red Bean-tree*. Cultivated in 1714, by the Dutchess of Beaufort^f.

There is some difference between the western and eastern plant; the prickles in the latter are blackish: but the difference seems scarcely sufficient to make them distinct species. The leaves sleep about noon by *conviving* or clapping together^g.

This is a native of the Society isles, and of the southern part of China and CochinChina.]

4. This has shrubby branched stalks, seldom above eight or nine feet high, armed in every part with strong crooked black spines. The leaves are smaller than those of the preceding, and have a nearer resemblance to the first; the foot-stalks are armed with the same sort of spines, and the midrib has also some which are smaller and not so black: the flowers are of a paler scarlet, and grow in looser spikes. The seeds are as large as those of the third sort, but of a dark purple colour.

[Linneus describes his plant, when only a year old, as very like *E. Coralhodendron*, from which however it differed in the leaflets having a white rachis and ribs with very small prickles on both surfaces, whereas the leaflets of that are green and unarmed. That has two glands at the base of the terminating leaflet; this has none; but the stem and petioles are prickly in both.]

This tree is generally planted in the East Indies for a support to the Pepper plants. [Cultivated in 1768, by Mr. Miller.

5. This is a very lofty tree without any prickles on the trunk. The branches are stiff. The leaflets ovate-oblong and quite entire. The petioles elongated, having frequently one or two recurved prickles underneath; on this petiole at the base of the pedicels on each side is a gland, and there are also two glands on the middle of the intermediate pedicel. Flowers two or three, axillary, purple, on separate peduncles, resupinate. Calyx bell-shaped, two-lipped, the lower lip dagger-pointed. Banner ovate-cordate, reflex, emarginate: wings shorter than the calyx: keel subfalcate, sharp, compressed, almost the length of the banner. Stamens diadelphous, the nine lower ones almost wholly united, the length of the keel: anthers oblong. Germ oblong, villose: style subulate: stigma with a minute

dot^b.—Native of Brasil. Introduced in 1771, by Francis Bearby, Esq.ⁱ.

6. Native of South America.

7. Stem arboreous, eight feet high, with a brown bark like that of Hemp, and many short scattered prickles. The branches are diffused. Leaves scattered, petioled: leaflets quite entire, smooth. Flowers of a brown-red colour, in a terminating raceme. Calyx sub-bilabiate, the lips entire and erect, having a melliferous pore above the base. Standard of the corolla very long, blunt, subturbinate, rolled into a tube, bent back at the base. Legumes columnar, jointed, hairy. Seeds oblong.

Native of CochinChina, on the banks of rivers^k.

Mr. Bruce affirms, that the seeds of one species of *Erythrina* are called *Carats*, and are used in weighing gold and precious stones^l.]

Mr. Miller mentions several other sorts or varieties of this fine genus. As one which he names *Erythrina inermis*, n. 6. The pods of which are longer, and not more than half so thick as those of the third sort; the seeds of a bright scarlet, longer and more slender than those of the others; the leaves small and acute-pointed; the stalks smooth and without spines. It does not grow very large, but shoots out into branches at a little distance from the ground, and these grow erect, so as to form a bushy shrub. The flowers come out at the ends of the branches in short spikes. The wings of the corolla are longer than in the other sorts, and the whole flower is more closed. It is a native of the islands in the West Indies.

A second which he raised from small seeds of a bright scarlet colour, that were sent him from the Cape of Good Hope. The plants had no spines; the leaves were much larger than the other sorts, their stems were strong, and they had the appearance of growing to large trees.

He raised a variety of the second sort, with paler flowers and seeds, and the plants less thorny.

Also a variety of the third sort, which he received from the island of Barbuda, with the flowers and pods very short, the stamens much longer than the petals, the pods very short and crooked, but rather thicker than those of the third sort, the leaves, stems and branches armed with spines.

PROPAGATION AND CULTURE.

These plants are best propagated by seeds procured from the countries where they grow naturally, for they do not produce any here. Sow them in small pots, and plunge them into a moderate hot-bed; where, if the seeds be good, the plants will come up in a month or five weeks. When they are two inches high shake them carefully out of the pots, and plant each in a separate small pot, filled with light earth, and plunged into a moderate hot-bed of tanners bark, shading them from the sun till they have taken new root, admitting a large share of air to them when the weather is warm, to prevent their being drawn up weak, and giving them more air as the plants increase in strength: water them frequently but moderately; for too much moisture will rot the fibres of their roots. In the autumn remove the plants into the stove; and for the two or three first winters they will require more heat than when they have acquired greater strength. Water them two or three times a week whilst the leaves are in vigour; but when these are fallen, moisture is very hurtful to them.

They may also be increased by cuttings, planted in pots during the summer months, and plunged into a hot-bed; but seedlings plants are best.

The first sort may be kept through the winter in a warm green-house, but in this situation it rarely flowers.

The second is frequently planted in the gardens near Lisbon, where it annually flowers, and the seeds ripen: but in England this and the other

^a Hort. kew.

^f Ibid.

^g Linn.

^b Linn. mant.

ⁱ Hort. kew.

^k Loureiro.

^l Travels, vol. 5. art. Kuara.

ports seldom flower, with any treatment we can give them.

[*ERYTHRINA*. See *Piscidia*.

ERYTHROBULBUS. See *Wachendorfia*.]

ERYTHRONIUM. (*Ερυθρονιον* of *Dioscorides*; from *ερυθρον*, red.)

Lin. gen. n. 414. Reich. 447. Schreb. n. 562.

Juss. 48. Dens canis. Tourn. 202.

Class. 6. 1. Hexandria Monogynia.

Nat. order of Sarmenaceae.—Lilia, Juss.

GENERIC CHARACTER.

CAL. none.

COR. Petals six, oblong-lanceolate, acuminate, alternately incumbent towards the base, gradually more spreading, from the middle bent backwards.

Nectaries: Tubercles two, obtuse, callous, growing to each alternate and interior petal near the base.

STAM. Filaments six, subulate, very short. Anthers oblong.

PIST. Germ turbinate. Style simple, shorter than the corolla, straight. Stigma triple, spreading, obtuse.

PER. Capsule somewhat globose, narrower at the base, three-celled, three-valved.

SEEDS very many, ovate, acuminate.

ESSENTIAL CHARACTER.

Cor. six-petalled, bell-shaped. *Nect.* Tubercles two, fastened to the base of the alternate petals.

SPECIES.

1. *Erythronium Dens canis.* Dog-tooth Violet.

Lin. spec. 437. Reich. 2. 49. hort. cliff. 119.

Hall. helv. n. 1234. Scop. carn. n. 406. Allion.

pedem. n. 1890. Gmel. sib. 1. 39. t. 7. Jacqu.

aust. 5. 31. app. t. 9. Villars dauph. 2. 274.

Gouan illustr. 25. Curtis magaz. 5.

Dens canis. Clus. hist. 266.

Dens caninus. Dod. pempt. 203. Ger. 154. emac. 204. 1.—latiore rotundioreque folio. Baub. pin.

87. Raii hist. 1178.—fl. albo, purpurascens, & rubro. Park. parad. 193. t. 191. f. 7, 8.

Satyrium quorundam Erythronium bifolium, fl. unico radiato albo & purpureo. Baub. hist. 2. 680.

β. E. longifolium. Mill. dict. n. 2.

Dens canis angustiore longiore folio. Baub. pin.

87. Raii hist. 1178.—fl. albo, angustioribus foliis. Ger. 154. f. 2. emac. 204. f. 2.

Satyrii Erythronii aliud genus. Baub. hist. 2. 680. f. 3.

γ. E. fol. ovato-oblongis glabris nigro-maculatis. Gron. virg. 151.

Dens caninus fl. luteo J. Rea. Raii hist. 1178. 3.

DESCRIPTION, &c.

Mr. Miller makes two distinct species. The first with two ovate leaves joined at their base, three inches long and one inch and a half broad in the middle, gradually lessening towards the ends; these at first embrace each other, inclosing the flower, but afterwards they spread flat upon the ground; they are spotted with purple and white all over their surface. Between them rises a single, smooth, purple, naked stalk, about four inches high, sustaining one flower, which hangs down; the petals are reflex and spread open to their base; their colour is commonly purple, but sometimes white. Stamens purple, standing close about the style, which is longer than them. The roots are white, oblong and fleshy, shaped like a tooth; whence this plant has the name of Dog's-tooth in English. [The same idea has governed the name in all the European languages. In German it is *Hundszahn*. In Swedish and Danish *Hundetand*. In French *Le dent de chien*. In Italian *Dente di cane*. In Spanish *Diente de perro*. In Portuguese *Dente de cão*. In Russian *Kandik*.]

β. The second differs in the shape of its leaves, which are longer and narrower; and the flowers are a little larger but not so well coloured.

γ. The leaves are of a darker green, and the flower is of a pale yellow colour.

These grow naturally in the South of France, Italy, Savoy, Switzerland, Austria, Friuli, Siberia. The last in Virginia.—Ray observed the first with a pur-

* Ray.

ple flower near Turin in the way to Asti, in April; and with a white flower between Novi and Genoa. Clusius found this variety near Gratz in Stiria; and John Bauhin at la Bâtie near Geneva, flowering in March; where I also gathered it on the 15th of March 1779.

Cultivated by Gerarde in 1596.]

PROPAGATION AND CULTURE.

This is increased by offsets from the roots, which they do not send out very plentifully. It is not therefore so common in gardens as most other flowers of the spring season. It loves a shady situation and a light loamy soil. It may be transplanted any time after the beginning of June, when the leaves will be quite decayed, till the middle of September; but the roots should not be too often removed, nor should they be kept very long out of the ground, for if they shrink they will frequently rot. They should not be planted scattering in the borders of the flower-garden, but in patches; and thus disposed, they will make a good appearance.

[*ERYTHROXYLON*. (*Ερυθρον ξυλον*, red-wood.)

Lin. gen. n. 575. Reich. 625. Schreb. n. 783.

Brown. p. 278. Jacqu. amer. 134. Juss. 253.

Class. 10. 3. Decandria Trigynia.

Nat. order of Malpighiæ, Jussieu.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-cleft, turbinate: divisions ovate, sharp; very small, withering.

COR. Petals five, ovate, concave, expanding.

Nectary of five scales, emarginate, upright, coloured, inserted into the base of the petals.

STAM. Filaments ten, length of the corolla, at the base connected by a truncated membrane. Anthers heart-shaped.

PIST. Germ ovate. Styles three, filiform, distant, length of the stamens. Stigmas obtuse, thickish.

PER. Drupe ovate, one-celled.

SEED. Nut oblong, obtusely quadrangular.

ESSENTIAL CHARACTER.

Cal. turbinate. *Cor.* having a small emarginate nectareous scale at the base of the petals. *Stam.* connected at the base. *Drupe* one-celled.

SPECIES.

1. *Erythroxylon areolatum.*

Lin. spec. 612. Syst. 427. Reich. 2. 374. amæn.

5. 397. Brown. jam. 278. t. 38. f. 2. Swartz

obs. 184. Vahl symb. 3. 59.

E. Carthagenense. Jacqu. amer. 134. t. 87. f. 1.

piet. 67. t. 129.

Leaves obovate mucronate, branchlets short floriferous scaly.

2. *Erythroxylon havanense.*

Lin. syst. 427. Reich. 2. 374. Jacqu. amer. 135.

t. 87. f. 2. piet. 67. t. 130.

Leaves elliptic, flowers axillary.

3. *Erythroxylon hypericifolium.*

Vahl symb. 3. 60. Cavan. diff. 8. t. 230.

Leaves obovate, emarginate, branches floriferous, peduncles axillary solitary.

4. *Erythroxylon squamatum.*

Swartz prodr. 75. Vahl symb. 3. 60. t. 63.

Leaves elliptic-lanceolate acuminate obtuse, branchlets scaly floriferous.

5. *Erythroxylon macrophyllum.*

Vahl symb. 3. 60. Cavan. diff. 8. t. 127.

Leaves elliptic acute, flowers axillary and lateral aggregate.

DESCRIPTIONS, &c.

1. Stem shrubby, even, with long spreading and somewhat rugged branches. Leaves petioled, alternate, obovate, narrower at the base, entire, veined, subglaucous underneath, deciduous. Flowers in alternate bundles, on short peduncles, small and white. Petals with claws, inserted into the edge of the segments of the calyx, oblong, convex, entire. Nectareous scales in the throat of the corolla, surrounding the stamens, waved about the edge. Filaments during the time of flowering connate above the middle, afterwards cut more deeply, awl-shaped and white. Anthers ovate, minute, yellow. Germ roundish. Styles awl-shaped, spreading very much. Stigmas

Stigmas capitate-peltate. Fruit an oblong drupe, resembling that of the Barberry, acuminate, scarlet, including an oblong attenuated hard nucleus or nut^a.

According to Jacquin, it is a tree twelve feet in height, with numerous branches, frequently coming out from the very bottom of the trunk, with the bark of a dark brown colour, and the wood solid and pale brown, but never reddish, as Browne represents it to be. Flowers very sweet, having the odour of the Jonquil but milder. The fruit does not seem to be eaten by any animal.

Browne says it is a small but beautiful tree: the leaves of an oval form, and marked with two slender longitudinal lines upon the back, which were the utmost limits of that part of the leaf which was exposed, while it lay in a folded state. The flowers grow in little clusters, and are very thick upon the branches. The inward bark is of a flesh colour, and the wood of a reddish brown. It is reckoned an excellent timber-wood, for the size of the tree, which seldom exceeds sixteen or eighteen feet in height, and five or six inches in diameter. Natives of the West Indies in dry coppices.

Dr. Browne has another species, which he calls, *small round-leaved Erythroxylon or Redwood, with very slender branches*. This tree, he says, differs much from the foregoing both in shape and manner of growth. It grows in the low lands of Jamaica, like the other, and rises commonly to the height of eighteen or twenty feet. Its leaves are roundish and small; and the branches very slender. *Browne n. 2. p. 278.*

2. This is a shrub, three feet in height, having altogether the habit of the preceding, but the leaves ovate, obtuse, quite entire, without any lines underneath. Fruit orange-coloured. It can hardly be a variety of the *areolatum*.

Native of the Havanna on rocks near the coast^b.

3. The branches are covered with a brownish wrinkled dotted bark, compressed at top, and tooth-letted from the fallen leaves. Scales on the branchlets awl-shaped and deciduous. Leaves petioled, glaucous underneath. Peduncles capillary, nearly the same length with the leaves.

4. Branches smooth, covered with an ash-coloured bark, round below, but compressed at top, among the leaves at top having ovate, half-embracing, short, acute, keeled scales, with a longitudinal groove on the back, at the base of which is inserted an awn the length of the scale. Branchlets axillary, alternate, compressed, the lower ones leafy, the upper leafless, toothed with ovate, imbricate, copious scales, spreading a little at the tip. The ends of the branches are of the same structure. Leaves on very short petioles, alternate, two inches and more in length, sometimes narrower towards the lower part, ending in a blunt point, acute at the base, very smooth, very finely veined, without any longitudinal nerves, paler underneath, quite entire. Peduncles on the branchlets, from the axils of the scales, solitary or in pairs, alternate, hardly an inch in length, angular, a little thicker towards the top, spreading. Segments of the calyx ovate, acute.

Native of the West Indies: observed in Cayenne by Rohr.

5. Branches round at bottom, compressed at top, smooth, covered with a gray bark, at bottom, among the leaves having approximating scales, of an ovate-lanceolate form, half-embracing, keeled, striated, purplish, acute; near the base on the outside is a brown awl-shaped awn, the length of the scale, concealed within the dorsal groove of the scales. There are two other bracte-shaped scales, one on each side, a little above the petiole: they are lanceolate, attenuated, and the same length with the flower. Leaves petioled, alternate, a span in length, sharp at both ends, smooth, glaucous and veined with purple underneath, quite entire. Petioles very short, brownish. Peduncles from the axils of the scales and leaves, several, one-flowered, with several linear-lanceolate

keeled scales interposed, a little shorter than the peduncles, the inmost narrower and shorter. The flowers, before they are unfolded, ovate, mucronate, with five prominent angles. Calyx coloured, with ovate acuminate segments. Petals linear, obtuse.

Observed in Cayenne by Rohr^c.

ESCALLONIA. (So named by the younger Linneus, in honour of Mons. Escallon, pupil and companion of Mutis, who found this and many other rare plants, in their journey through New Granada, which they sent to Linneus.)

Lin. suppl. 21. gen. Schreb. n. 386. Juss. 321.

Smith ic. ined. 2. t. 30, 31.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Calycanthemæ*.—*Onagræ*, Juss.

GENERIC CHARACTER.

CAL. one-leaved, five-cleft, superior, permanent: divisions spreading, keeled, sharp.

COR. Petals five, tongue-shaped, distant, longer than the calyx.

STAM. Filaments five, smooth, opposite to the divisions of the calyx, alternate with the petals, and shorter than them. Anthers incumbent, fastened by the back to the filaments, emarginate, two-celled.

PIST. Germ half-inferior, an oblate spheroid. Style upright. Stigma capitate.

PER. Berry roundish, surrounded with the calyx, terminated by the permanent style, two-celled.

SEEDS numerous, small, nestling.

ESSENTIAL CHARACTER.

Cal. surrounding the fruit. Stigma capitate. Berry two-celled, containing many seeds.

SPECIES.

1. *Escallonia myrtilloides*.

Lin. syst. 242. suppl. 156. Smith ic. ined. 2. 30.

Leaves serrulate ending in a small dagger-point veiny underneath.

2. *Escallonia ferrata*.

Smith ic. ined. 2. 31.

Leaves serrate subretuse veinless underneath.

DESCRIPTIONS, &c.

1. This is a branching, leafy shrub. Branches wandlike, obscurely angular, covered with a smooth, chinky, deciduous bark. Branchlets alternate, spreading, angular, closely leaved, one-flowered. Leaves alternate, spreading, obovate, obtuse with a little dagger-point, minutely ferrulate especially towards the tip, of an even surface on both sides, almost veinless above, underneath paler and veined, attenuated at the base into a short, channelled, decurrent petiole, more or less glandular-ciliate at the edge. Flowers terminating, solitary, peduncled, upright. No proper bractes, but small leaves like the others, only more plainly ferrate, approaching the flower. Peduncles straightish, angular, glandulous. Divisions of the calyx from erect spreading, acuminate, bowed back at the tip, somewhat pubescent about the edge. Petals upright, bowed back at the tip, obtuse, scarcely twice the length of the calyx. Style obscurely angular, the length of the stamens. Stigma umbilicate. Berry the size of a pea, covered with a lid, which does not seem to fall off spontaneously.—Escallon first found it in New Granada^d.

2. This is a low shrub, very much branched, leafy, smooth, and having the appearance of *Vaccinium*. Branches alternate, angular, somewhat flexuose, with a smooth, pale bark. Branchlets alternate, straightish, leafy, one-flowered, green. Leaves only on the last shoots, deciduous, alternate, petioled, obovate, obtuse, often retuse, with a point, both surfaces even, obscurely veined above, underneath pale, entirely without veins, having only a nerve running along the middle; attenuated at the base into a short, channelled, keeled petiole, quite entire at the edge. No stipules or bractes. Flowers terminating, solitary, peduncled, upright, very handsome, milk white, with a violet-coloured germ. Peduncles short, round, thickening at the tip, bent in, smooth. Divisions of the calyx spreading, deltoid,

^a Swartz.

^b Jacquin.

^c Vahl.

^d Smith.

somewhat fleshy, smooth, pale underneath, coloured above. Petals spreading; obtuse, three times the length of the calyx. Filaments broader at the base. Style columnar, short. Berry small, continuing through the winter, covered with a lid which is cut round horizontally near the calyx and at length falls off. All the parts of the fructification except the petals are only one-third of the size of those in the foregoing species.

Commerçon found it in the straits of Magellan; and Archib. Menzies in Terra del Fuego^d.]

ESCHALOT or Eschalotte, [from Ascalon, about which place it grows wild, this plant was called *Cepa Ascalonica* and *Ascalonitides*. The old English name was *Barren Onions*, because it seldom puts up any flowering stem.] See *Allium*.

ESCHYNOMENE. See *Mimosa*.

ESCULUS. See *Quercus*.

ESPALIERS, are either rows of trees planted about a whole garden or plantation, or in hedges so as to inclose quarters or separate parts of a garden; they are trained up flat in a close hedge, for the defence of tender plants against the violence and injury of wind and weather.

The most commonly received notion of Espaliers are hedges of fruit-trees, which are trained up regularly to a lattice of wood work, formed either of Ash-poles, or square long timbers cut out of Fir, &c. and it is of this sort of Espalier that I shall treat in this place.

Espaliers of fruit-trees are commonly planted to surround the quarters of a kitchen-garden, for which purpose they are of admirable use and beauty; for by laying out the walks of this garden regularly, which are bounded on each side by these hedges, when they are handsomely managed, they have a wonderful effect in sheltering the kitchen-plants in the quarters, and also screening them from the sight of persons in the walks; so that a kitchen-garden well laid out in this manner, and properly managed, will be equal to the finest regular parterre for beauty.

The trees chiefly planted for Espaliers are Apples, Pears, and some Plums; but the two former are mostly used: some plant Espaliers of Apples grafted upon Paradise-stocks; but these being of humble growth, and a short duration, are not so proper for this purpose, unless for very small gardens; therefore I should rather advise the having them upon Crab-stocks, or if in smaller gardens, where the trees cannot be allowed to grow so high, upon what the gardeners call the Dutch-stock; which will cause them to bear sooner, and prevent their growing too luxuriantly, and these will continue many years in vigour.

In chusing the trees for an Espalier, endeavour as near as possible, to plant the several sorts which are nearly of the same growth in one line, that the Espalier may be the more regular, and of an equal height, which greatly adds to their beauty; for if you plant trees which shoot very unequally in the same line, it will be impossible to make the Espalier regular: besides, the distance of the trees must be in proportion to their growth; for some trees, viz. those of a larger growth, should be planted thirty or thirty-five feet asunder; whereas those of smaller growth, need not be above twenty-five feet distance from each other.

The width of the walks and borders between these Espaliers should (in a large garden) be fourteen or sixteen feet at least; and if the trees are designed to be carried up pretty high, the distance should be greater, that each side may receive the advantage of the sun and air, which is absolutely necessary, if you would have the fruit well tasted. And if your ground is so situated, that you are at full liberty which way to make the Espaliers, I would advise the placing the lines from the east a little inclining to the south, and toward the west a little inclining to the north, that the sun may shine between the

rows in the morning and evening when it is low; for in the middle of the day, when the sun is advanced far above the horizon, it will shine over the tops of the Espaliers, and reach the surface of the earth about their roots, which is a matter of more consequence than many people are aware of.

The sorts of Apples proper for Espaliers, are the Golden Pippin, Nonpareil, Rennette Grise, Aromatic Pippin, Holland Pippin, French Pippin, Wheeler's Ruffet, Pile's Ruffet, with some others. The season for planting, and the method of pruning and training these trees, you will see under the articles of PRUNING, and PYRUS.

The sorts of Pears proper for an Espalier, are chiefly the summer and autumn fruits, for some of the winter Pears seldom succeed well in an Espalier. These trees, if designed for a strong moist soil, should be upon Quince-stocks; but if for a dry soil upon free-stocks. Their distance of planting must also be regulated by the growth of the trees, which are more unequal in Pears than Apples, and should therefore be more carefully examined before they are planted. As for those Pears upon free-stocks, the distance should never be less than thirty feet for moderate growing trees; but for vigorous shooters, the space of forty feet is little enough; especially if the soil be strong, in which case they should be planted at a greater distance.

The particular sorts of Pears I would recommend for an Espalier, are the Jargonelle, Blanquette, Poire sans Peau, Summer Boncretien, Hamden's Bergamot, Autumn Bergamot, L'ambrette, Gros Roufflet, Chaumontelle, Beurre du Roy, Le Marquis, Cressane, with some others of less note; always remembering, that those Pears which are of the melting kind, will do better in Espalier than the breaking Pears, which seldom ripen well on an Espalier; as also that many sorts of Pears will ripen well on an Espalier in a warm soil and situation, which require a wall in other places; you should also be careful of the stocks these are grafted on; for if the breaking Pears are grafted upon Quince-stocks, the fruit will be stony, but the melting Pears will be improved by them. As to the method of planting, see the article PYRUS; and for pruning and managing, see PRUNING.

I shall now give directions for making the Espalier, to which the trees are to be trained; but this should not be done until the third year after the trees are planted; for while they are young, it will be sufficient to drive a few short stakes into the ground on each side of the trees, in a straight line, to which the branches should be fastened in an horizontal position, as they are produced, in order to train them properly for the Espalier; which stakes may be placed nearer, or at a farther distance, according as the shoots produced may require; and these will be sufficient for the three first years; for should you frame the Espalier the first year the trees are planted, many of the stakes would rot before the Espalier is covered. The cheapest method to make these Espaliers is with Ash-poles, of which you should have two sorts; one of the largest size, which contains thirteen poles in a bundle, and the other size those of half a hundred. The first or largest sized poles, should be cut about seven feet and a half long; these are intended for upright stakes, and must be sharpened at the largest end, that they may, with more ease, be driven into the ground; and if their bottoms are burred, or rubbed over with a proper composition, they may be preserved a long time sound; these should be placed at a foot distance from each other in a direct line, and of an equal height, about six feet above ground; then you should nail a row of straight slender poles along upon the tops of the upright stakes, which will keep them exactly even, and continue to cross the stakes with the smaller poles, and also with the tops which were cut off from the larger stakes, at about nine inches distance, row from row, from the top to the bottom of the stakes. These rows of poles should be fastened with wire to the stakes, which if made of Fir,

and

and painted over, will last a long time; and the largest end of the poles should be cut flat, and nailed to the upright stakes, which will secure the Espalier almost as long as the poles will endure; whereas, if your fastening is not strong, the poles will be continually displaced with every strong wind.

When your Espalier is thus framed, you must fasten the branches of the trees thereto either with small Osier-twigs, rope-yarn, or some such binding, observing to train them in a horizontal position, and at equal distances; being careful not to cross any of the branches, nor to lay them in too thick. The distance which should be allowed for the branches of Pears and Apples, must be proportioned according to the size of their fruit; such of them whose fruit is large, as the Summer Boncretien, Monsieur John, and Beurre du Roy Pears, and the Rennet Grise, Holland Pippin, French Pippin, and other large Apples, should have their branches six or eight inches distance at least; and to those of lesser growth, four or five inches will be sufficient. But for farther directions, I shall refer to the articles of the several fruits: as also that of PRUNING, where these particulars will be sufficiently explained.

But besides this sort of Espalier made with Ash-poles, there is another sort that is by many people preferred; which is framed with square timbers cut to a proper size, according to the strength thereof, or the expense the owner is willing to go to. These, though they appear more lightly, when well fixed and painted, are not of longer duration than one of the former, provided it is well made, and the upright poles are of sufficient strength: nor will they answer the purpose better, though they are vastly more expensive: the greatest beauty of an Espalier consists in disposing the branches of the trees; which, especially in summer, when the leaves are on, entirely hide the frame. All expense, therefore, farther than what is necessary to secure the branches in a regular order, is needless.

Fruit-trees thus planted and well managed, are much preferable to those trained up in any other figure: first, because they take up very little room in a garden, and are not injurious to the crops in the quarters: secondly, because the fruit is better tasted, the sun and air having free access to every part of the tree, and the dampness of the ground being quickly dissipated: thirdly, because the trees being kept low, and the branches fastened to the Espalier, the fruit will not be so apt to be blown down by the wind.

[ESULA. See *Apocynum* & *Euphorbia*.

ETHIOPIAN SOUR GOURD. See *Adansonia*.

ETHULIA.

Lin. gen. n. 934. Reich. 1014. Schreb. 1271. Juss. 184. Gært. t. 164. Sparganophorus Vaill A. G. 1719.

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of *Compositæ Discoideæ*.—*Corymbifera*. Juss.

GENERIC CHARACTER.

CAL. Common many-leaved, rounded, simple: leaflets linear, nearly equal, spreading.

COR. Compound tubular: corollets hermaphrodite, uniform, distant by a space.

Proper funnel-form: border five-cleft, upright.

STAM. Filaments five, very short, capillary. Anther cylindric, tubular.

PIST. Germ prismatic. Style filiform, length of the stamens. Stigmas two, recurved.

PER. none. Calyx unchanged.

SEEDS solitary, truncated, turbinate, five-cornered, five-furrowed. Down none, but a little projecting margin.

REC. naked, convex, excavated with points.

ESSENTIAL CHARACTER.

Recept. naked. Down none.

SPECIES.

1. *Ethulia conyzoides*. *Panicled Ethulia*.

Lin. spec. 1171. Reich. 3. 712. Lin. dec. 1. t. 1. Fabl symb. 1. 69.

Kahiria. Forsk. ægypt. 153.

Flowers panicled.

2. *Ethulia Sparganophora*.

Lin. spec. 1171. Juss. 734. Reich. 3. 712. Vaill. æt. 368.

Sparganophorus Vaillantii. Gært. fruct. 2. 395.

Flowers sessile, lateral.

3. *Ethulia divaricata*.

Lin. Juss. 734. Reich. 3. 713. mant. 110, 572.

Gært. fruct. 2. 389. Burm. ind. 176. t. 51.

f. 1. Pluk. alm. 103. t. 160. f. 5. (Chrysanthemum).

Leaves linear toothed decurrent, peduncles opposite to the leaves, one-flowered, stem divaricate.

4. *Ethulia tomentosa*.

Lin. Juss. 735. Reich. 3. 713. mant. 110.

Undershrubby; leaves linear, quite entire, tomentose.

5. *Ethulia bidentis*.

Lin. Juss. 735. Reich. 3. 713. mant. 110.

Racemes directed one way, calyxes containing about five flowers, leaves lanceolate, opposite.

6. *Ethulia Struchium*.

Swartz prodr. 111. Brown. jam. 312. n. 1. t. 34. f. 2.

Flowers axillary, sessile, all trifid.

DESCRIPTIONS, &c.

1. Root annual. Stem herbaceous, the thickness of a finger, four feet in height, upright, round, but angular at top, pubescent, hollow. Branches alternate, axillary, short, somewhat erect. Leaves alternate, longer than the intervals, lanceolate, acuminate, equally serrate, smooth, subpubescent underneath, veined, spreading very much, flat; the lowest opposite. Petioles very short, half-stem-clasping, channelled, subpubescent. Corymbs terminating, compound, three times shorter than the leaves, cylindric, streaked, upright, pubescent. Bractes few, subulate, bowed back, at the base of the peduncles. Flowers small, containing above twenty florets, of a pale blue colour. Common calyx imbricate, longer than the flower, permanent; scales sharp, green, smoothish. Tube of the corollets cylindric, widening at top; segments of the border ovate, spreading. Seeds smooth, small.

It is a large plant, agreeing in stature with *Baccharis* or *Conyza*. The fructification corresponds in most circumstances with *Eupatorium* and *Ageratum*; but it differs materially from all these four genera, in having no down or feather to the seeds. It is also remarkable in having the florets distant; and in putting forth roots from the base of the stem, which is seldom the case in annual plants. The leaves smell very sweet.

Native of the East-Indies. It was sent to the Upsal garden by Professor David van Royen about the year 1760 or 1761, under the name of *Eupatorium**. It was introduced here in 1776 by Mons. Thouin: and flowers in July and August.

2. Calyx subglobular, imbricate, with unequal scales, recurved and patulous at the tip. Receptacle flat, with raised dots on it. Seeds small, uniform, ovate, narrower at bottom, rhomb-compressed, with angles at the sides, and one on the back, the rib white, but the interstices and the ventral plane of a pale testaceous colour. Pappus or crown margined or shaped like a bowl, a little more than half the length of the seed, subcartilaginous, snowy-white, shining, four-cornered; either quite entire, or obscurely four-toothed*. It is a very small plant, from the East-Indies. Linneus doubts whether Vaillant's plant be the same. Gærtner separates this from *Ethulia*, with which he says it has nothing in common, except the calyx.

3. An annual plant, a hand in height. Stem upright, corymbed, smooth at bottom, pubescent at top, and branched: the primary branches shorter, sharply quadrangular. Leaves lanceolate, alternate, quite entire, somewhat fleshy, forming the angles of the stem by the bases running down on each side. Calyxes terminating, subsessile; the scales imbricate.

* Linn. dec. Hort. kew. Gærtner.

late, subulate, extremely acuminate, standing out, purplish. Styles longer than the corolla^d.—Calyx subglobular, subsquarrose, scales oblong, patulous or recurved at the tip. Florets difform; those of the disk funnel-shaped, five-cleft, androgynous, barren, fewer; in the ray awl-shaped, without teeth, female, fertile, very numerous. Receptacle flat, large, hollow-dotted. Seeds to the female flowers only, sub-turbinate, striated, minute, pale, bald, or without any crown^e. Gærtner separates those which have a crown, under Vaillant's name of Sparganophorus. —Observed by König in the fields of Malabar.

4. Stems streaked, branched. Leaves alternate, sessile, lanceolate-linear, hoary, or very finely tomentose, like those of Lavender. Calyxes terminating, sessile, loose, somewhat leafy. Native of China^f.

5. Annual. Stem herbaceous, upright, hexagonal, brachiate. Leaves three-nerved, subpetioled, ferrate, smooth. Racemes two or four, at the ends of the stem and branches, brachiate, on the upper side of which are sessile, narrow, yellow flowers, about five together, alternate, and supported by a subulate bracte. Seeds oblong, even, with a few streaks. Flowers small as in *Milleria*, but narrow. —Native of the East-Indies^g.

6. This rises generally to the height of two feet and a half, or more. Leaves alternate, oblong, entire. Flower-bunches interspersed with a few smaller ones, that rise between the common cups, as they stand compacted together at the axils of the leaves. Calyx bell-shaped, imbricate, with unequal, narrow, acuminate scales, from erect-spreading. Corollas nearly equal, the marginal ones trifid, the central ones four-parted. Germ oblong, angular, crowned with its proper calyx, which has about four little notches; style longer than the corolla; stigmas oblong, revolute. Receptacle tumid, dotted.

Native of Jamaica^h.

PROPAGATION AND CULTURE.

Most of these plants being annual, must be propagated by seeds; and coming from the East-Indies, must be kept in the stove. The first only has hitherto been cultivated in Europe.]

EUCALYPTUS. (*Ev καλυπτος, bene tectus, opertus; well covered. So named from the perianth being covered with a remarkable veil or lid.*)

L'Heritier fert. angl. 18. t. 20. *Juss.* 451.

Class. 12. 1. Icosandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* superior, permanent, truncate, covered with a hemispherical, deciduous lid before flowering time.

COR. none.

STAM. *Filaments* very numerous, inserted into the calyx.

PIST. *Germ* inferior, turbinate. *Style* single.

PER. *Capsule* four-celled, gaping only at the tip.

SEEDS very many, angular.

ESSENTIAL CHARACTER.

CAL. superior, permanent, truncate, before flowering-time covered with a hemispherical, deciduous lid.

COR. none. **Caps.** four-celled, opening at the top, inclosing many seeds.

SPECIES.

1. *Eucalyptus obliqua.* *Oblique-leaved Eucalyptus.*

L'Herit. fert. angl. 18. t. 20. *Ait. hort. kew.* 2. 157.

E. piperita. *White voy.* 226?

2. *Eucalyptus resinifera.* *Red Gum tree.*

White voy. 231.

DESCRIPTIONS, &c.

1. This is a very tall tree, growing to the height of more than an hundred feet, and above thirty in circumference: the bark is smooth, like that of the poplar: the younger branches are long and slender, angulated near the top, but as they grow older the angles disappear. The leaves are alternate, lanceolate, pointed, very entire, smooth on both sides, and remarkably unequal or oblique at their base: the veins are alternate, and not very conspicuous:

^d Linn. mant.

^e Gærtner.

^f Linn. mant.

^g Ibid.

^h Browne.

the whole surface of both sides of the leaves is marked with numerous minute resinous spots, in which an essential oil resides: the footstalks are about half an inch in length, round on the under side, angular above, quite smooth. The flowers have not been fully examined, but the capsules are supposed to grow in clusters from six to eight in each, sessile and conglomerated: each is about the size of a hawthorn berry, globular, but as it were cut off at the top, and of a dark brown colour: the seeds numerous, small, and angular. N. B. It is not clear that the above is really the same species with the *E. obliqua* of L'Heritier. The description is taken from Mr. White's Voyage, where it is named *E. piperita*.

2. This is a large and lofty tree, much exceeding the English oak in size: the wood is brittle, and contains a large quantity of resinous gum: the flowers grow in little clusters, or rather umbels, about ten in each, and every flower has its proper partial foot-stalk, about a quarter of an inch in length, besides the general one: the general foot-stalk is remarkably compressed, and the partial ones in some degree: the flowers are yellowish, and of a singular structure: the calyx is hemispherical, perfectly entire on the margin, and afterwards becomes the capsule: on the top of the calyx, rather within the margin, stands a conical pointed calyptra, which is of the same colour with the calyx, and about as long as that and the calyx taken together: this calyptra, which is the essential mark of the genus, and differs from that of the *E. obliqua* of L'Heritier, only in being conical and acute instead of hemispherical, is perfectly entire, and never splits or divides, though it is analogous to the corolla of other plants: when it is removed, we perceive a great number of red stamina standing in a conical mass: the anthers are small and red, and in the centre is a single style, terminated by a blunt stigma: the stamens are very resinous and aromatic: the germ appears, when cut across, to be divided into three cells; each containing the rudiments of one or more seeds. On making incisions into the trunk of this tree, large quantities of red resinous juice are obtained; sometimes more than sixty gallons from a single tree: when dried this juice becomes a powerfully astringent gum-resin, much resembling that known in the shops by the name of Kino, and for all medical purposes full as efficacious. Mr. White, the chief surgeon to our settlement at Botany Bay, administered it to a great number of patients in the dysentery, and found it eminently serviceable, so as not to fail in a single instance. This gum-resin dissolves almost entirely in spirit of wine, to which it gives a blood-red tincture: water dissolves about a sixth part only, and the watery solution is of a bright red: both these solutions are powerfully astringent.

EUCLEA. (*From ευκλεια or ευκλεα, glory or celebrity.*)

Lin. gen. Reich. n. 1236. *Schreb.* 1542. *suppl.* 67.

L'Herit. fert. angl. 31. *Juss.* 432. *Tbunb. gen.* t. 84.

Class. 22. 10. Dioecia Dodecandria or Polygamia.

GENERIC CHARACTER.

* Male.

CAL. *Perianth* one-leaved, many times shorter than the corolla, subangular, smooth, five-toothed: *teeth* very short, upright.

COR. one-petalled, five-parted: *segments* ovate, obtuse, concave, patulous.

STAM. *Filaments* thirteen (about fifteen, *L'Herit.*) very short; eight in the circumference, five in the centre, (inserted into the receptacle, *L'Herit.*) *Anthers* four-cornered-subulate, grooved, erect, perforated at the tip on both sides, (subvillose, shorter than the corolla, *L'Herit.*)

* Female.

CAL. *Perianth* one-leaved, four-toothed (more seldom five-toothed) permanent: *segments* erect, three times shorter than the corolla.

COR. one-petalled, four-cleft: *segments* ovate, obtuse, concave, erect.

PIST.

PIST. Germ ovate, subvillose, superior. Styles two, thickish, the length of the corolla. Stigmas emarginate-bifid, obtuse.

PER. Berry globular, umbilicate with a dot, smooth, fleshy. (A berried capsule, three-horned, three-celled, three-valved. *L'Herit.*—two-celled, *Linn.*)

SEED single, globular, smooth; (roundish, arilled, one or two abortive, *L'Herit.*)

OBS. Calyx and corolla in the males often five-cleft, seldom four-cleft, very seldom six-cleft; in the females often four-cleft, very seldom five-cleft. Thunb. There are hermaphrodite and male hermaphrodite flowers, hence it seems to belong to the class Polygamia. *L'Herit.*

ESSENTIAL CHARACTER.

MALE. Cal. four or five-toothed. Cor. four or five-parted. Stam. twelve to fifteen.

FEM. Cal. and Cor. as in the male. Germ superior. Styles two. Berry two-celled.

SPECIES.

1. *Euclea racemosa*. Round-leaved *Euclea*.

Lin. syst. 892. *suppl.* 429. *L'Herit. fert. angl.* 32.

Thunb. gen. 5. 85. *Breyn. ic. t.* 22. *f.* 3.

Burm. afr. 238. *t.* 84. *f.* 1? (*Padus.*)

DESCRIPTION, &c.

This is a branching tree. Leaves alternate, subpetioled, obovate, quite entire, obtuse, smooth, perennial. Racemes of flowers from the axils of the upper leaves, simple, nodding, hardly the length of the leaves^a.

Monf. *L'Heritier* remarks that specimens of this and *Celastrus corniculatus*, when in fruit, are as much alike as one egg is to another, and that from this circumstance, before he was acquainted with the flower, he took this for that.—See *Celastrus corniculatus*.

Native of the Cape of Good Hope. Introduced here in 1722, by Mr. Thomas Knowlton. It flowers in november and december^b.

EUCOMIS. (*Euxomus* or *euxomus*, having beautiful hair.)

L'Herit. fert. angl. 17. *Lin. gen. Schreb. n.* 1743.

Basilæa. Juss. 52.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Coronariæ*.—*Asphodeli.* *Juss.*

GENERIC CHARACTER.

CAL. none.

COR. inferior, six-parted, permanent, spreading.

STAM. Filaments subulate, dilated at the base, and united there into a concave nectary fastened to the bottom of the corolla.

PIST. Germ superior. Stigma simple.

PER. Capsule three-celled.

SEEDS many.

ESSENTIAL CHARACTER.

Cor. inferior, six-parted, permanent, spreading. Filam. united at the base into a nectary growing to the corolla.

SPECIES.

1. *Eucomis nana*. Dwarf *Eucomis*.

L'Herit. fert. angl. 17. *Ait. hort. kew.* 1. 432.

Fritillaria nana. *Burm. cap.* 9. *Lin. syst.* 325.

Reich. 2. 46. *mant.* 223.

Orchidea capensis, tulipæ flore roseo. *Petiv. gaz.* *t.* 85. *f.* 6.

Scape club-shaped, leaves broad-lanceolate, acute.

2. *Eucomis regia*. Tongue-leaved *Eucomis* or *Fritillary*.

L'Herit. fert. angl. 17. *Ait. hort. kew.* 1. 433.

Fritillaria regia. *Lin. spec.* 435. *Reich.* 2. 46.

Mill. dict. n. 9.

F. longifolia. *Hill. kew.* 354. *t.* 15.

Corona regalis lili fol. crenato. *Dill. elth.* 109.

t. 93.

β. *Fr. autumnalis.* *Mill. dict. n.* 10.

Scape cylindric, leaves tongue-shaped obtuse close to the ground.

3. *Eucomis undulata*. Waved-leaved *Eucomis* or *Fritillary*.

Ait. hort. kew. 1. 433.

^a *Linn. suppl.*

^b *Hort. kew.*

Scape cylindric, leaves ovate-oblong, waved, spreading, the leaves of the coma almost as long as the raceme.

4. *Eucomis punctata*. Spotted *Eucomis*.

L'Herit. fert. angl. 18. *t.* 18. *Ait. hort. kew.* 1. 433.

Asphodelus comosus. *Hbutt. nat. hist.* 12. 336. *t.* 83.

Scape cylindric, leaves oblong-lanceolate, channelled, spreading, leaves of the coma short, racemes very long.

DESCRIPTIONS, &c.

1. The leafing is that of *Maffonia*. Leaves ovate, acuminate, marked with lines underneath, the veins confluent at the tip^c. Native of the Cape of Good Hope. It flowers in may. Introduced in 1774, by Mr. Francis Maffon^d.]

2. Root tuberous, from which arise in the autumn six or eight obtuse leaves, near five inches long, and two broad towards the top, growing narrower at their base, crenated on their borders, lying flat on the ground, and continuing all the winter. In the spring arises the flower-stalk in the centre of the leaves, about six inches high, naked at the bottom; but the upper part is surrounded by bell-shaped flowers, of a greenish colour, appearing in april. The leaves decay in june.

[Native of the Cape of Good Hope. Cultivated in the Eltham garden, to which it was sent by Mr. Blathwaite of Dirham in Gloucestershire^e.—And before that, in 1709, by the Dutchess of Beaufort, at Badminton^f; from whose garden probably Mr. Blathwaite had it.]

β. The leaves of this are more than a foot long, broad at their base, but narrowed to the top, where they end in acute points. The flower-stalk rises higher than that of the preceding; the flowers are of the same shape and colour, but seldom appear till august. It was raised by Mr. Miller from seeds sent him from the Cape of Good Hope.

[3. Native of the Cape of Good Hope. It flowers from march to may. Introduced about 1760 by Mr. Miller^g.

4. Native of the Cape of Good Hope. It flowers in july. Introduced in 1783, by Mr. John Græfer^h. This is the largest species; the second is of a middle size, and the first is smallⁱ.

PROPAGATION AND CULTURE.

These plants are to be managed in the same way with other Cape bulbs.

EVEA. See *Callicocca*.]

EVERGREEN-THORN. See *Mespilus Pyracantha*.

[**EVERLASTING.** See *Gnaphalium*.]

EVERLASTING PEA. See *Lathyrus*.

EUGENIA. (So named from Prince Eugene of Savoy, who was a protector and encourager of Botany, and possessed a Botanic Garden.)

Lin. gen. n. 616. *Reich.* 671. *Schreb.* 842.

Mich. 108. *Juss.* 324.

Class. 12. 1. Icosandria Monogynia.

Nat. order of *Hesperideæ*.—*Myrti.* *Juss.*

GENERIC CHARACTER.

CAL. Perianth one-leaved, superior, elevated in the middle into a subvillose little ball, four-parted; divisions oblong, obtuse, concave, permanent.

COR. Petals four, twice as large as the calyx, oblong, obtuse, concave.

STAM. Filaments very many, inserted into the ball of the calyx, length of the corolla. Anthers small.

PIST. Germ turbinate, inferior. Style simple, length of the stamens. Stigma simple.

PER. Drupe four-cornered, crowned, one-celled.

SEED. Nut roundish, smooth.

OBS. This genus is not easily distinguished from *Myrtus*, except in the habit: 1, 2, 6, 7 are more distinct; but 3, 4, 5 approach nearer to *Myrtus*. Swartz.

ESSENTIAL CHARACTER.

Cal. four-parted, superior. Pet. four. Drupe one-seeded, four-cornered.

^c *L'Heritier.*

^d *Hort. kew.*

^e *Hort. kew.*

^f *Ibid.*

^g *L'Heritier.*

^h *Dillenius.*

ⁱ *Ibid.*

SPECIES.

SPECIES.

1. *Eugenia malaccensis*. Broad-leaved *Eugenia*.
Lin. spec. 672. *Reich.* 2. 474. *fl. zeyl.* n. 187.
Rumph. amb. 1. 121. t. 37, 38. *Rheed. mal.*
1. 29. t. 18. *Raii hist.* 1478. n. 2. *Burm.*
ind. 114. *zeyl.* 124. *Forst. escul.* 6. *Lour.*
cochinch. 306.
Perfici officulo fructus malaccensis rubens. *Baub.*
pin. 441.
Leaves quite entire, peduncles branched, lateral.
2. *Eugenia Jambos*. Narrow-leaved *Eugenia*.
Lin. spec. 672. *Reich.* 2. 475. *fl. zeyl.* n. 188.
Rumph. amb. 1. 127. t. 39. *Rheed. mal.* 1. 27.
t. 17. *Raii hist.* 1478. n. 1. *Burm. ind.* 114.
Lour. cochinch. 307.
Perfici officulo fructus malaccensis ex candido ru-
bescens. *Baub. pin.* 441.
Leaves quite entire, peduncles branched, terminating.
- [3. *Eugenia Pseudo-Psidium*.
Lin. syst. 461. *Reich.* 2. 475. *Jacqu. amer.* 152.
t. 93. *piet.* 75. t. 140.
Leaves quite entire, peduncles one-flowered several
lateral and terminating.
4. *Eugenia uniflora*.
Lin. spec. 673. *Reich.* 2. 475. *fl. zeyl.* n. 189.
Mich. gen. 226. t. 108. *Tilli pisan.* 117. t. 44.
Leaves quite entire, cordate-lanceolate, peduncles one-
flowered, lateral.
5. *Eugenia cotinifolia*.
Lin. syst. 461. *Reich.* 2. 475. *mont.* 243. *Jacqu.*
obs. 3. 3. t. 53.
Leaves ovate, obtuse, quite entire, peduncles one-
flowered.
6. *Eugenia acutangula*.
Lin. spec. 673. *Reich.* 2. 476. *fl. zeyl.* n. 190.
Rumph. amb. 3. 181. t. 115. *Rheed. mal.* 4. 15.
t. 7. *Raii hist.* 1480. 4. *Burm. ind.* 114.
Lour. cochinch. 307.
Leaves crenate, peduncles terminating, fruits oblong
acute-angled pomes.
7. *Eugenia racemosa*.
Lin. spec. 673. *syst.* 461. *Reich.* 2. 476. *fl. zeyl.*
n. 191. *Rumph. amb.* 3. 181. t. 116. *Rheed.*
mal. 4. 11. t. 6. *Raii hist.* 1479. 3. *Burm.*
ind. 115.
Leaves crenate, racemes very long, pomes ovate, qua-
drangular.
8. *Eugenia sessiliflora*.
Vabl. symb. 3. 64.
Flowers lateral, sessile, leaves oblong, quite entire,
shining, dotted underneath.
9. *Eugenia punctata*.
Vabl. symb. 3. 65.
Leaves oblong, dotted on both sides, peduncles opposite
three-flowered, the length of the leaves.
10. *Eugenia nervosa*.
Lour. cochinch. 308.
Leaves quite entire, flowers heaped, terminating, ber-
ries globular nerved.
11. *Eugenia corticosa*.
Lour. cochinch. 308.
Leaves ovate, acuminate, racemed, corymbed, filaments
very short.

DESCRIPTIONS, &c.

These are trees or shrubs, all natives of the East or West-Indies. The flowers are borne on peduncles, proceeding either from the axils or ends of the branches, either singly, or many together in a trichotomous structure*. The fruit in some sorts seems to be rather a berry than a drupe; and in the 6th and 7th is called a pome.

1. This rises with a tree-like stem from twenty to thirty feet high, covered with a brown bark, and sending out many branches. Leaves oblong, ending in acute points, opposite; when young of a bright purple colour, but as they grow older becoming of a light green. The flowers are produced on the sides of the branches; every peduncle branching into three or four others, each of which supports one flower. Fruit succulent, irregularly shaped, and

inclosing a single nut. Loureiro calls it a berry: it is of a roundish form, commonly obtusely quadrangular; sometimes it is ovate; in size it is an inch and half in diameter, fleshy, very sweet, smelling like the rose, not very juicy; covered with a thin, shining, yellowish skin; and containing commonly one seed, which is large, roundish, softish, not bony or horny. The fruit is very agreeable to the taste, smell and sight, and is esteemed wholesome.—Forster describes it as whitish, tinged with rose-colour, pear-shaped, and sometimes as big as the fist, but usually much smaller. It is very common in most of the islands in the South Sea, and is cultivated almost every where between the tropics.—Mr. Miller cultivated it here in 1768^b.] He says that he received it from Dr. Heberden, with some other plants, which were sent by his brother from Brasil.

2. This rises to the same height, but the leaves are longer and narrower. Flowers mostly terminating, but some come out from the sides. Fruit smaller, rounder, and not so much esteemed.

[Leaves opposite, petioled, the lower oval, the upper lanceolate, and very long^c. Flower greenish yellow. Fruit pear-shaped, two inches long, white and red, having no smell^d.

Native of the East-Indies and Cochinchina. It flowers from may to july. Cultivated in 1768 by Mr. Miller^e.

3. This is an upright tree twenty feet high, in appearance not unlike a Pear tree. Leaves lanceolate-ovate, acuminate and sickle-shaped at the end, bright green, shining, from three to four inches long, opposite, on short petioles. Peduncles one-flowered, above an inch long, aggregate. Calyx deeply four-parted. Petals white. Fruit globular, at first green, then passing through the different shades of yellow as it ripens, till at length it becomes scarlet; it is scarcely half an inch in diameter, the skin is thin, and the pulp is soft, sweet and red. The seed is large and globular. Native of Martinico, where it is called *Goyavier bastard*. It flowers in october, and bears fruit in december and january^f.

4. Peduncles solitary. Flowers white; fruit bright red, soft, slightly grooved, and having a sweet smell. It was first brought from Goa, and cultivated in the Grand Duke's garden near Florence; whence it came into the public botanic gardens of Florence and Pisa about the year 1718^g.

5. The younger branches are angular. The leaves are numerous, opposite, subpetioled, glittering, leathery, sometimes but seldom emarginate. Peduncles axillary, one, two or three^h, slender, an inch in length. Fruit globular, succulent, inclosing a single shining membranaceous nut, having one seed in it. Native of Cayenne, where it is called by the French *Cerifier de Cayenne*ⁱ.

6. Leaves at the ends of the branches, exactly like those of the Horse-Chestnut, obovate, sharpish, very finely toothed. Raceme simple, very long. Flowers small, with longish stamens and pistils^j. Loureiro says, it is a large tree with spreading branches. Leaves large, smooth, scattered, on long petioles. Flowers reddish, sessile, on racemes often two feet long, and pendulous. Calyx bell-shaped, with roundish segments. Petals small, roundish, converging. Filaments filiform, very long, with roundish anthers. Germ turbinate-round: style awl-shaped, longer than the stamens. Berry oblong, three inches in length, sharpish at both ends, quadrangular, with sharp angles, juiceless, corticose, somewhat wrinkled, brownish yellow; inclosing one large ovate smooth farinaceous seed.

Native of the East-Indies, and of Cochinchina.

7. Peduncles simple, longer than the leaves, pendulous. Pomes rounded, without any sharp angles^k. Native not only of India, but of New Caledonia in the South Seas.

^b Hort. kew.

^c Hort. kew.

^d Linn. mant.

^e Linn. zeyl.

^f Jacquin.

^g Jacquin.

^h Ibid.

ⁱ Loureiro.

^j Micheli.

^k Linn. zeyl.

* Jussieu.

Jussieu refers the two last species to other genera; the 6th to *Stravadium*, and this to *Butonica*: both having alternate leaves, and many flowers together in racemes.

8. Branches round, smooth, covered with an ash-coloured bark, leafy at top, warted below. Leaves opposite, on very short petioles, sometimes two inches long, and frequently an inch and half broad, the edges a little turned back, netted, veined on both sides, very smooth, the upper surface and not dotted, the lower paler, with numerous brownish dots scattered over it. Flowers below the leaves, solitary or several, opposite. Calyx coriaceous, with oblong leaflets, hoary on the outside, dotted with brown. Fruit the size of a Plum, globular, dotted. Observed in the island of Santa Cruz by West.

9. Branches round, alternate, ash-coloured at bottom, purplish at top, having raised dots scattered over them. Leaves opposite, an inch or more in length, bluntish, smooth, rigid, flat, quite entire, paler underneath, on short petioles; when young they are silky. Peduncles axillary, solitary, dotted. The two lateral flowers pedicelled, the middle one sessile. There are two bristle-shaped bractes at the base of the lateral ones. Segments of the calyx five, rounded, dotted. Petals, when magnified, appearing to be very finely ciliate.

Observed in the island of Santa Cruz by von Rohr and West^m.

Vahl doubts whether it be any thing more than a variety of *Myrtus fragrans*, with which it agrees in many circumstances. It differs only in having the peduncles constantly axillary and three-flowered, not terminating and three-parted, with three-flowered pedicels, as in *Myrtus fragrans*: the leaves also are on longer petioles. It seems to differ from *Eug. guianensis* of Aublet in having the peduncles the same length with the leaves, and larger flowers.

10. This is a large tree, with spreading branches. Leaves lanceolate, smooth. Flowers white, on one-flowered peduncles. Calyx large. Petals roundish, small, quickly deciduous. Filaments linear, more than a hundred, three times as long as the petals, spreading out wide into a globular head: with small, nodding anthers. Style awl-shaped, longer than the stamens, with a sharp stigma. Berry globular, an inch in diameter, nerved, smooth, corticose, brownish red; inclosing one globular seed, in many angular pieces, nearly equal in size, and easily separable.

11. This also is a large tree with spreading branches, covered with a thick cloven bark, having something of an aromatic flavour. Leaves quite entire, smooth, subopposite. Flowers reddish-white, small, numerous, subterminating. Calyx goblet-shaped, subtruncate. Petals small, roundish, closed. Filaments twenty, awl-shaped, shorter than the corolla, placed near the edge of the calyx; anthers roundish, very small. Berry only a quarter of an inch in diameter, subturberate, smooth, blackish; inclosing one roundish softish seed.

This and the preceding are natives of Cochin-China in woodsⁿ.

Jacquiu has another species, which he names *Eugenia carthagenensis*, with two varieties of it—*baruensis* and *myrtifolia*.]

PROPAGATION AND CULTURE.

Set the stones, fresh from their places of natural growth, in small pots filled with light earth: plunge them in a hot-bed, observing to keep the earth moist, but not wet. In about six weeks the plants will appear; when about four inches high, separate them carefully, plant each in a small pot, plunge them in the hot-bed again, and shade them carefully till they have taken new root. Treat them in the same way as other tender plants from the same countries, keeping them plunged in the tan-bed, and in winter watering them sparingly.

[EUODIA. See *Agathophyllum* and *Fagara*.

EVOLVULUS. (From *evolvere* to roll out.)

Lin. gen. n. 385. Reich. 416. Schreb. 524. Juss. 134.

^m Vahl,

ⁿ Loureiro.

Class. 5. 4. Pentandria Tetragynia.

Nat. order of *Campanaceae*.—*Convolvuli*. Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved; leaflets lanceolate, sharp, permanent.

COR. one-petalled, rotate, five-cleft.

STAM. Filaments five, capillary, spreading, almost the length of the corolla. Anthers a little oblong.

PIST. Germ somewhat globose. Styles four, capillary, diverging, length of the stamens. Stigmas simple.

PER. Capsule somewhat globose, four-celled, four-valved.

SEEDS solitary, roundish, cornered on one side.]

OBS. This genus is allied to *Convolvulus*.

E. linifolius afforded the character.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. five-cleft, rotate. Caps. three-celled. Seeds solitary.

SPECIES.

1. *Evolvulus nummularius*.

Lin. spec. 391. Reich. 1. 750. Jacqu. amer. pict. t. 260. f. 23. Swartz obs. 118.

Convolvulus nummularius. Lin. spec. edit. 1. 157.

Brown. jam. 153. Sloan. jam. 1. 157. 18. t. 99. f. 2. Raii suppl. 382. n. 94.

Leaves roundish, stem creeping, flowers subsessile.

2. *Evolvulus gangeticus*.

Lin. spec. 391. Reich. 1. 750. amæn. 4. 306. n. 121.

Leaves cordate, obtuse, mucronate, villose, petioled, stem diffuse, peduncles one-flowered.

3. *Evolvulus alsinoides*. Chickweed-leaved *Evolvulus*.

Lin. spec. 392. syst. 299. Reich. 1. 750. fl. zeyl. n. 76. hort. cliff. 68. Burm. zeyl. 11. t. 6.

f. 1. & 19. t. 9. (Alfine & Anagallis.) Rheed. mal. 11. 131. t. 64. Pluk. alm. 116. t. 9. f. 1.

Leaves obcordate, obtuse, hairy, petioled, stem diffuse, peduncles three-flowered.

4. *Evolvulus emarginatus*.

Lin. syst. 299. suppl. 186.

Leaves kidney-form, repand.

5. *Evolvulus linifolius*. Flax-leaved *Evolvulus*.

Lin. spec. 392. syst. 299. Reich. 1. 750. amæn. 4. 306. n. 122. Brown. jam. 152. t. 10. f. 2.

Leaves lanceolate, villose, sessile, stem upright, peduncles three-flowered, long.

6. *Evolvulus tridentatus*.

Lin. spec. 392. syst. 299. Reich. 1. 751. Burm. ind. t. 16. f. 3. Pluk. mant. t. 167. f. 5.

(*Convolvulus*). Rheed. mal. 11. 133. t. 65.

β. *Convolvulus indicus barbatus minor*, foliorum apicibus lunulatis. Pluk. alm. t. 276. f. 6.

Leaves linear-wedge-form, three-cusped, dilated at the base and toothed, peduncles one-flowered.

7. *Evolvulus sericeus*.

Swartz prodr. 55. Brown. jam. 153. n. 3. t. 10. f. 3. (*Convolvulus*.)

Leaves lanceolate, sessile, silky underneath, peduncles short, one-flowered.

DESCRIPTIONS, &c.

1. From a small, stringy, fibrous, annual root, spring long, trailing stalks, taking root here and there where they touch the ground, and putting forth alternately at small unequal distances leaves almost round, like those of *Lyfimachia tenella*, three quarters of an inch long, and an inch broad, having a small notch at the end, and on petioles a quarter of an inch in length, and of a brown colour. Flowers axillary, on short peduncles, of a light blue colour; (Swartz says, white.) Legume brown, containing two or three brown seeds*. Browne observes that the flowers are deeply crenated. Jussieu affirms, that the styles are two, and bifid; and that the plant is not milky. According to Swartz, the styles are three or four; and the capsule three or four-celled, and three or four-valved.

Native of Jamaica and Barbadoes. Common also in the dry plains of other islands in the West-Indies.

* Sloane

2. Native of the East-Indies.

3. This is a little annual plant, with a creeping root. The stems, leaves, petioles and peduncles are covered with rufous hairs. Leaves alternate, roundish, on a short petiole. Flowers axillary, solitary, on long peduncles. Corolla blue, large in proportion to the plant. In Ceylon it has the name of *Wisnugarandi*, from the Malabar deity *Wisnu*, and *Garandi*, which signifies the dysentery. It is reputed to be a sovereign remedy in that disorder^p.

Native of the East-Indies. Introduced in 1771, by Monf. Richard. It flowers in June and July^a.

4. Annual. Stems filiform, creeping. Leaves petioled, smooth, waved about the edge; petioles muricate underneath. Flowers axillary, solitary, small. Peduncles the length of the petioles. Native of the East-Indies^t.

5. This whole plant has the appearance of a very fine sort of flax. It seldom rises above ten or fourteen inches. The stalk is generally simple, or but very little divided, slender and upright. The leaves are narrow and few: they each throw out a long and delicate peduncle from their axils, furnished with a very small exterior two-leaved cup about the middle. The styles are two, and bifid. The capsules are divided into two or four cells, and contain many seeds. In the low lands of Jamaica^q. It is an annual; flowers in August and September; and was introduced in 1782, by Mr. Francis Masson^r.

6. The stem of this is twining. Native of the East-Indies^u.

7. According to Browne, this is so extremely like the *linifolius*, that they are hardly to be distinguished without great attention. The flower-stalks are very short in this, the cups single, and every flower furnished with four styles. Native of Jamaica, in the low lands.

PROPAGATION AND CULTURE.

These are all stove plants, to be cultivated and treated as the tender sorts of *Convolvulus* from the same countries.

EUONYMO AFFINIS. See *Croton* and *Kiggelaria*.

EUONYMOIDES. See *Celastrus*.

EUONYMO SIMILIS. See *Coffea*.]

EUONYMUS. (*Εὐώνυμος* of *Theophrastus*. From *εὖ* good, and *ονομα*, a name, κατ' ἀντιστάσιν, as the grammarians speak; this shrub having a bad reputation, as a poison.)

Engl. *Spindle-tree*.

Fr. *Fusain*, or *Bonnet de Prêtre*.

Lin. gen. n. 271. Reich. 291. Schreb. 373.

Tourn. 388. Juss. 377. Gertn. t. 113.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Dumosæ*. *Rhamni* Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-parted, flat: divisions roundish, concave.

COR. Petals five, ovate, flat, spreading, longer than the calyx.

STAM. Filaments five, subulate, upright, shorter than the corolla, placed on the germ as it were on a receptacle. Anthers twin.

PIST. Germ acuminate; style short, simple. Stigma acute.

PER. Capsule succulent, coloured, five-sided, five-cornered, five-celled, five-valved.

SEEDS solitary, ovate, involved in a berried aril.

OBS. The fructification in some individuals or species takes away a fifth part of the number. In some there are no filaments, except the points of the receptacle.

ESSENTIAL CHARACTER.

Cor. five-petalled. Caps. five-sided, five-celled, five-valved, coloured. Seeds calyptred, or veiled.

SPECIES.

1. *Euonymus europæus*. Common *Spindle-tree*.

Lin. syst. 238. Reich. 1. 554. mant. 342. fl. suec.

n. 204. Gertn. fruct. 2. 149. Ait. hort. kew.

1. 273. Hudf. angl. 98. With. 241. Relb.

^p Burm.

^a Browne.

^q Hort. kew.

^r Hort. kew.

^s Linn. suppl.

^u Linn.

cant. n. 185. Hall. belv. n. 829. Neck. gallob.

124. Pollich. pal. n. 232. Allion. pedem. n.

1634. Krock. files. n. 352. Villars dauph.

2. 540. 1. Hellen. monogr. 11.

E. eur. z. tenuifolius. Lin. spec. 286.

E. vulgaris. Mill. dict. n. 1. Scop. carn. n. 267.

Park. theat. 241. 1. Raii hist. 1621. syn. 468.—

granis rubentibus. Baub. pin. 428.

E. multis, aliis Tetragonia. Baub. hist. 1. 202.

Euonymus Camer. epit. 102. Dod. pempt. 783.

E. Theophrasti. Ger. 1284. 1. emac. 1468. 1.

Flowers mostly four-stamened, peduncles compressed, many-flowered, stigmas awl-shaped, leaves smooth, (bluntly serrate, angles of the capsules blunt.)

2. *Euonymus latifolius*. Broad-leaved *Spindle-tree*.

Lin. syst. 238. Mill. dict. n. 2. Ait. hort. kew.

1. 273. Hellen. monogr. 17. Hall. belv. n. 830.

Scop. carn. n. 266. Jacqu. austr. 3. 48. t. 289.

Allion. pedem. n. 1633. Krock. files. n. 353.

Baub. pin. 428. Ger. 1284. f. 2. emac. 1468.

f. 2. Park. theat. 241. f. 3. Raii hist. 1621. 2.

Jonst. dendr. 7. 3. t. 104. Dubam. arb. 2. 226.

n. 3. Villars dauph. 2. 540. 2.

E. 1. f. latifolia. Clus. hist. 2. 56. Baub. hist.

1. 202.

Most of the flowers five-stamened, bark smooth, peduncles filiform, cylindric, many-flowered; (leaves sharply serrate, angles of the capsules sharp.)

[3. *Euonymus verrucosus*. Warted *Spindle-tree*.

Lin. syst. 238. Ait. hort. kew. 1. 273. Scop.

carn. n. 268. Jacqu. austr. 1. 30. t. 49. Hellen.

monogr. 12.

E. eur. γ. leprosus. Lin. suppl. 154.

E. 2. Clus. hist. 1. 57.

E. fl. phoeniceo. Baub. hist. 1. 203.

E. granis nigris. Baub. pin. 428. Jonst. dendr. 2. 3.

t. 104.

E. pannonicus. Ger. 1285. f. 3. emac. 1468. 3.

Raii hist. 1622.

Flowers four-stamened, bark warted, peduncles filiform, cylindric, with about three flowers.

4. *Euonymus atropurpureus*. Purple-flowered *Spindle-tree*.

Lin. syst. 238. Ait. hort. kew. 1. 274. Jacqu.

hort. 2. 55. t. 120.

Flowers four-stamened, peduncles compressed, many-flowered, stigmas four-sided, truncate.]

5. *Euonymus americanus*. Evergreen *Spindle-tree*.

Lin. spec. 286. Reich. 1. 555. mant. 342. hort.

ups. 30. cliff. 32. (Celastrus.) Gron. virg. 17.

Pluk. alm. t. 115. f. 5. Hellen. monogr. 15.

Rhus virginianum, folio myrti. Comm. hort. 1. 157.

t. 81. Raii dendr. 57. 7.

All the flowers five-cleft, leaves sessile.

[6. *Euonymus Tobira*.

Lin. syst. 238. Thunb. jap. 99. Hellen. monogr. 13.

Flowers five-cleft, leaves oblong, retuse, entire.

7. *Euonymus japonicus*.

Lin. syst. 238. Thunb. jap. 100. Kämpf. ic.

select. t. 8. Hellen. monogr. 9. fig.

Flowers four-cleft, leaves ovate, obtuse, serrate.

8. *Euonymus chinensis*.

Lour. cochinch. 156.

Stem scandent, leaves three-lobed, peduncles many-flowered.

DESCRIPTIONS, &c.

The difficulty of giving significant and permanent specific or trivial names, is apparent from this genus. When two species only were known, they might well be distinguished by the titles *europæus* and *americanus*; but now that we know three European and two American species, this distinction is insufficient, and very absurd. The same may be said of Thunberg's title *japonicus*; and he ought to have done better, because he knew that there were two Japanese species. I acknowledge the difficulty of giving significant trivial names to be great; and I leave them as I find them, being unwilling to increase that confusion which necessarily arises from the prodigious number of plants which the industry of later botanists has discovered.

These

These are trees or shrubs. The smaller branches or twigs four-cornered. The leaves opposite, scarcely stipulaceous. The peduncles axillary, solitary, opposite, one-flowered or else many-flowered, disposed in umbels^a.]

1. The common Spindle-tree, when growing in hedges, is seldom seen of any considerable size, but is a shrub; if planted single, however, and properly trained, it will have a strong woody stem, and rise more than twenty feet high, dividing into many branches. Leaves lanceolate, about three inches long, and an inch and quarter broad in the middle, opposite, entire, of a deep green colour. The flowers come out at the end of may, or the beginning of june, in small bunches from the side of the stalks on slender peduncles. The petals are whitish, and spread in form of a cross.

[Though most of the flowers have four stamens, a four-parted calyx, and four petals to the corolla; yet it may be ranged in this class, with its congeners, from the primary flower, which has five stamens, a five-parted calyx, and five petals^b. The capsule is turbinate, swelling out like a cushion, or the old-fashioned clerical cap, four-grooved; barked with a soft red membrane, coriaceous, four-celled and four-valved. Partitions fastened to the middle groove of the valves. Seeds fixed, without any receptacle to the central angle of the cells; they are solitary, or very rarely in pairs, ovate-globular, smooth, involved in a fleshy-spongy aril, which is perforated in the part opposite to the navel, fixed to the dorsal band of the seed, and saffron-coloured; the seeds are pale flesh or rose-coloured^c.] The fruit ripens in october, at which time the seed-vessels spread open and expose the seeds, which being of a beautiful red colour, these shrubs make then a good appearance.

[From its use for skewers it has the name of *Prick-wood*, and is called by Gerard *Prick Timber tree*. It is called also *Louse Berry*, *Dogwood* and *Gatteridge Tree*, by which latter names it is confounded with *Cornus sanguinea*.

In German it is named *Spindelbaum*. In Swedish *Älster*. In Danish *Beenved*. In Italian *Fusaggine*. In Spanish *Bonetero*; *bonete de clérigo*. In Portuguese *Barrete de clérigo*. In Russian *Mereskletiana*, *Kislanka*, *Swida*, *Sedlini Beresdren*.

The wood is said to be used by the musical instrument makers. For skewers and toothpicks the branches should be cut when the shrub is in blossom, for it is then tough, and not easily broken; in that state it is also used by watch-makers, for cleaning watches. According to Linneus, kine, goats and sheep eat it, but horses refuse it. No animal, however, seems to browse upon it but the goat. The berries are said to be fatal to sheep; they vomit and purge violently; powdered and sprinkled upon the hair, they destroy lice^d.]

2. This rises with a stronger stem than the first, and grows to a larger size. The leaves are ovate-lanceolate, about four inches long, and two broad in the middle, opposite, entire, light green, on short foot-stalks. The flowers come out from the side of the branches, upon very slender peduncles, two inches and a half long, branching out into a loose bunch, and the flowers on separate pedicels. Petals five, at first white, but changing to purple. The same number predominates in the other parts of the fructification. The fruit is much larger than that of the common sort, and the peduncles being weak, it always hangs down. Native of Austria, Hungary, and most of the southern parts of Europe. This was seldom seen in England, till Mr. Miller procured it from France; and it is now become very common in the nurseries.

[3. This differs from the two former in having the stem and branches warted, the upper surface of the petals covered with a pile consisting of very small teats: the anthers rounded, and placed upon

their pyramidal filaments like the cap of a mushroom—a raised tubercle supporting each filament—the receptacle variegated, with red dots—no style, but instead of it a stigma like a bladder—the capsule more flattened at top, the surface a little wrinkled, and as broad as long—the seeds half black^e. Native of Austria and Carniola.—Cultivated here in 1763 by Mr. James Gordon; and flowering in may and june^f.

4. This is a native of the northern parts of Asia, and is a shrub about six feet high, with an ash-coloured bark, smooth, and free from tubercles: the branches are round, and a little compressed at their extremities: the leaves are oblong-lanceolate, smooth on both sides, veiny on the back, and stand opposite; they are very finely serrated on the edges, where they are of a purple tinge, as are also the foot-stalks: the common peduncles are biflorous, slender and branchy; the proper ones red. All the flowers, (which are dark purple) are constantly tetrandrous. The styles are greenish, and the anthers yellow^g.

Introduced in 1756, by Messrs. Kennedy and Lee^h.

5. This rises with a shrubby stalk to the height of eight or ten feet, dividing into many branches, which come out opposite from the joints of the stem. Leaves lanceolate, two inches long, and about three quarters of an inch broad in the middle, ending in acute points; they are opposite, and continue green all the year. The flowers are produced at the ends of the branches, and also from the sides, in small clusters; and are succeeded by round capsules, which are closely armed with rough protuberances. It flowers in july, but seldom produces ripe fruit in England.

This being an evergreen shrub, it merits a place in every curious garden, and particularly in all plantations. There is a variety in the nurseries with variegated leaves.

[It was cultivated in 1713, by Bishop Comptonⁱ.

6. Stem shrubby, upright, leafless, branched, scarce a fathom in height. Branches alternate, round, upright, round, leafless. Branchlets alternate, upright, green, smooth, leafy. Leaves aggregate, petioled, shining above, pale underneath, netted, bent down at the edge, upright, thickish, from an inch to two inches in length, oblique, smooth. Petioles compressed, pale, half an inch long. Flowers at the ends of the branchlets, aggregate in a kind of umbel, upright. Peduncles round, one-flowered; seldom divided, pubescent; twice the length of the petioles. Calyx seldom four-cleft, pubescent, green; upright, closed, four times shorter than the corolla; divisions lanceolate, bluntish, keeled. Petals five, seldom six, white, smelling like orange flowers; oblong-ovate, blunt, entire, patulous. Stamens seldom six. Capsule ovate, blunt, crowned with the permanent style, smooth, three-furrowed, three-valved, seldom four-valved, very rarely five-valved and five-furrowed. Seeds about four within each valve, ovate, angular, red, involved in a viscid aril, within white. The whole plant is somewhat milky. Native of Japon, where it flowers in may^k.

7. Stem shrubby, strict, ash-coloured, naked, a fathom in height. Branches opposite, from upright spreading, green, but little leafy. Branchlets decussate, leafy, short, green. Leaves on the outmost branches, opposite, approximate, petioled, serratures obtuse, entire at bottom, thick, paler underneath, nerved, smooth, from erect spreading, an inch in length. Petiole semicylindric, smooth, a line long. Flowers axillary, paniced. Panicle trichotomous, decomposed, divaricate, subfastigiata. Peduncle and pedicels angular, smooth, compressed. Calyx four-leaved, permanent, inferior; divisions broad-ovate, obtuse, concave, smooth, half the length of the corolla, pale green. Corolla four-petalled, white, patulous; petals rounded, concave, entire, a

^a Jussieu.

^b Linn.
^d Withering.

^c Gartner.

^e Scopoli.
^h Hort. kew.

^f Hort. kew.
ⁱ Ibid.

^g Jacquin.
^k Thunberg.

line in length. Stamens four. Capsule subglobular, four-grooved, smooth, four-valved, four-celled; the style and calyx permanent. Seeds four, oblong, the outer coat red, within white, in the centre green. Sometimes one of the seeds is abortive. Sometimes also the calyx is three-leaved, the germ three-sided, and the capsule three-celled and three-furrowed.—It varies with leaves spotted with white. The flowers appear in June and July, and the fruit ripens in November and December.—Native of Japan¹.]

8. Stem herbaceous, long, climbing by tendrils. Leaves cordate, three-lobed, the middle lobe acute, the side ones obtuse, toothletted, sharp. Flowers white. Calyx five-cleft, spreading. Petals five, oblong-ovate, spreading, longer than the calyx. Berry superior, ovate, attenuated to both ends, ten-cornered, one-celled, valveless, containing many ovate compressed seeds, covered by a succulent calyptra. Native of China, beyond the suburbs of Canton.

It does not agree very well with this genus, but may remain here till a better place be found for it^m.]

PROPAGATION AND CULTURE.

1—4. The four first sorts may be propagated either by seeds, or layers; if by seeds, they should be sown in autumn, soon after they are ripe; then the plants will come up the spring following; but if the seeds are not sown till spring, the plants will not appear till the following spring, whereby a whole year is lost. The seeds should be sown upon a shady border, where they will succeed better than when they are more exposed to the sun. When the plants come up, they will require no other care but to keep them clean from weeds till the following autumn, when, as soon as their leaves decay, the plants should be taken up and transplanted into a nursery, in rows two feet distant, and the plants one foot asunder in the rows; in this place they may remain two years, and then they may be removed to the places where they are to remain.

When these are propagated by layers, the young shoots should be laid down in autumn; and if the joint which is laid deepest in the ground is slit, as is practised for Carnations, it will cause them to put out roots much sooner than they otherwise would do; these layers will be sufficiently rooted in one year to bear transplanting, when they should be taken from the old plants, and treated in the same way as the seedlings. The cuttings of these sorts, planted in a shady border, will take root, but they should be planted in autumn, as soon as their leaves begin to fall; they should be the shoots of the same year, with a knot of the former year at bottom.

5. The fifth sort, which grows naturally in North America, is so hardy as rarely to suffer by cold in England, provided it is not planted in places very much exposed. This may be propagated by laying down the young branches in the autumn, observing to tongue them in the same manner as is practised in laying of Carnations: these will have made good roots in one year, when they may be cut from the old plants, and planted in a nursery for two years to get strength; after which, they should be planted where they are designed to remain.

[6, 7, 8. Have not yet been introduced into cultivation.

EUONYMUS. See *Ceanothus*, *Celastrus*, *Rhododendron*, *Spiræa*, *Trichilia*.

EUPAREA. (Εὐπαρεία, *pulchras genas habens*. The petals being of a beautiful flesh colour.)

Banks. *Lin. gen.* Schreb. n. 397. *Gertn. t.* 50.

Class. 5. 1. Pentandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets lanceolate, acute.

COR. Petals five or twelve, oblong, narrow, spreading, longer than the calyx.

STAM. Filaments five. Anthers

¹ Thunberg.

^m Loureiro.

PIST. Germ roundish, superior. Style bristle-shaped, long. Stigma simple.

PER. Berry juiceless, globular, crowned with the permanent style, one-celled.

SEEDS very many, roundish, small, adhering to a globular, fungous, free receptacle in the middle of the berry.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. five or twelve-petalled. Berry superior, one-celled. Seeds very many, adhering to a free receptacle.

SPECIES.

1. *Euparea amoena*.

Soland. Mfs. t. 50. f. 5. *Gertn. fruct.* 1. 230.

DESCRIPTION, &c.

This is a procumbent plant, having the appearance of *Nummularia*, but only one fourth of the size. The flowers have the colour of those of *Anagallis phœnicea* or *Pimpernel*, but are many-petalled. The fruit, which Gærtner in one place calls a capsule, and in another a juiceless berry, however it be pressed, will not open with regular valves: it is therefore nearly allied to *Trientalis*. The seeds have a navel in the belly opposite to the embryo.

Native of New Holland^a, and Terra del Fuego.

EUPATORIA. See *Agrimonia*, *Conyza*, *Eupatorium*, *Kubnia*, *Serratula*.

EUPATORIO-AFFINIS. See *Baccharis* & *Serratula*.

EUPATORIODES. See *Gnaphalium*.]

EUPATORIOPHALACRON. See *Eclipta*, *Siegesbeckia*, *Verbesina*.

EUPATORIUM. (of Pliny. Εὐπατόριον of Dioscorides. From Eupator, the surname of Mithridates, who is supposed first to have brought a plant of this kind into use, as a medicine.)

Engl. Hemp-Agrimony. Fr. Eupatoire.

Lin. gen. n. 935. *Reich.* 1015. *Schreb.* 1272.

Gertn. t. 166. *Tourn.* 259. *Vaill. A. G.* 1719.

Juss. 178. *Dill. elth.* 114.

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of *Compositæ Discoideæ*.—*Corymbiferae*.

Juss.

GENERIC CHARACTER.

CAL. Common oblong, imbricate: scales linear-lanceolate, upright, unequal.

COR. Compound uniform, tubular; corollets hermaphrodite, equal.

Proper funnel-form: border five-cleft, spreading.

STAM. Filaments five, capillary, very short. Anthers cylindric, tubular.

PIST. Germ very small. Style filiform, very long, two-cleft almost to the germs, straight. Stigmas slender.

PER. none. Calyx unchanged.

SEEDS oblong. Down plumose, long. (Pilose, only toothletted or ciliate. G.)

REC. naked.

OBS. Most of the species have a simple or hairy down. Some have a simple calyx.—It is difficult to distinguish this genus from *Chrysocoma* but by the calyx.

ESSENTIAL CHARACTER.

Cal. imbricate, oblong. Style cloven half way, long. Down plumose. Recept. naked.

SPECIES.

* Calyxes four-flowered.

[1. *Eupatorium Dalea*. Shrubby Hemp-Agrimony.

Lin. spec. 1171. *Reich.* 3. 714. *Swartz obs.* 298.

Dalea fruticosa, &c. *Brown. jam.* 314. t. 34. f. 1. (good)

Leaves lanceolate, veined, obscurely serrate, smooth, stem shrubby.

2. *Eupatorium parviflorum*.

Swartz prodr. 111.

Shrubby, leaves ovate-lanceolate serrate smooth, corymbs spreading, calyxes three-flowered.]

3. *Eupatorium hyssopifolium*. Hyssop-leaved Hemp-Agrimony.

Lin. spec. 1171. *Reich.* 3. 714. *Thunb. jap.* 307.

Dill. elth. 141. t. 115. f. 140. *Mor. hist.*

^a Gærtner.

3. 98. 23. *Pluk. alm. t. 88. f. 2. Raii suppl.*
189. 27.
Leaves lanceolate-linear, three-nerved, almost entire.
4. *Eupatorium scandens.* Climbing Hemp-Agrimony.
Lin. spec. 1171. syst. 735. Reich. 3. 714. hort. cliff. 396. upf. 253. Gron. virg. 120. Plum. ic. 99. (Conyza) Pluk. alm. t. 163. f. 3.
Stem twining, leaves cordate-ovate, attenuated, crenate-toothed, lobes divaricate, branches smooth.
- [5. *Eupatorium volubile.*
Vahl symb. 3. 93.
Leaves cordate-ovate, crenate, acute, lobes parallel, stem twining, branches and petioles villose.
6. *Eupatorium denticulatum.*
Vahl symb. 3. 93.
Leaves cordate rugged, minutely toothletted, branches angular.
7. *Eupatorium amarum.*
Vahl symb. 3. 93.
E. vincæfolium. *Lamarck encycl. 2. p. 407.*
E. parviflorum. *Aubl. guian. 797. t. 315.*
Leaves cordate-ovate, acuminate, quite entire, subtomentose underneath, flowers corymbed, stem climbing.]
8. *Eupatorium Houstoni.* Houston's Hemp-Agrimony.
Lin. spec. 1172. Reich. 3. 715. hort. cliff. 396. Amm. herb. 451. Swartz obs. 300.
Stem twining, leaves ovate, quite entire.
** Calyxes five-flowered.
- [9. *Eupatorium zeylanicum.* Ceylon Hemp-Agrimony.
Lin. spec. 1172. syst. 735. Reich. 3. 715. fl. zeyl. n. 306. Burm. ind. 176. Mor. hist. 3. 99. 29. Burm. zeyl. 52. t. 21. (Cacalia).
Leaves ovate-hastate, petioled, toothed.
10. *Eupatorium sessilifolium.* Sessile-leaved Hemp-Agrimony.
Lin. spec. 1172. Reich. 3. 715. hort. upf. 254. Gron. virg. 118. Mor. hist. 3. 98. 13. Raii suppl. 188. 20.
Leaves sessile, stem-clasping, distinct, lanceolate.
11. *Eupatorium album.* White Hemp-Agrimony.
Lin. syst. 735. Reich. 3. 716. mant. 111. Thunb. jap. 308.
Leaves lanceolate serrate, leaflets of the calyx lanceolate, scariose at the end, and coloured.
12. *Eupatorium chinense.* Chinese Hemp-Agrimony.
Lin. spec. 1172. Reich. 3. 716. Thunb. jap. 308.
Leaves ovate, petioled, serrate.
13. *Eupatorium japonicum.* Japanese Hemp-Agrimony.
Lin. syst. 737. Thunb. jap. 308.
Leaves undivided and three-lobed, serrate, stem scabrous.]
14. *Eupatorium rotundifolium.* Round-leaved Hemp-Agrimony.
Lin. spec. 1173. Reich. 3. 716. Pluk. alm. t. 88. f. 4. Raii suppl. 189. Mor. hist. 3. 94. 9. (Cacalia).
Leaves sessile, distinct, roundish-cordate.
- [15. *Eupatorium stipulaceum.*
Vahl symb. 3. 94.
Leaves hastate, acute at both ends, three-nerved, stipuled, flowers corymbed, stem climbing.]
16. *Eupatorium altissimum.* Tall Hemp-Agrimony.
Lin. spec. 1173. syst. 735. Reich. 3. 716. Jacqu. hort. 2. t. 164. hort. upf. 253. Gron. virg. 118. Mor. hist. 3. 97. 5. Raii suppl. 187. 17.
Leaves lanceolate, nerved, the lower ones a little serrate on the outmost part; stem undershrubby.
- [17. *Eupatorium hastatum.* Hastate-leaved Hemp-Agrimony.
Lin. spec. 1172. Reich. 3. 717. amæn. 5. 405. Swartz obs. 299.
Kleinia scandens, &c. *Brown. jam. 316. t. 34. f. 3.*
Leaves cordate-hastate, somewhat toothed, naked, stem twining, flowers in spikes.
18. *Eupatorium syriacum.* Syrian Hemp-Agrimony.
Lin. syst. 736. Jacqu. misc. 2. 349. Icon. rar. t. 35.
Leaves opposite, subsessile, ternate.
19. *Eupatorium trifidum.*
Vahl symb. 3. 94.
Leaves three-parted, the floral ones undivided, stem climbing.]
20. *Eupatorium trifoliatum.* Three-leaved Hemp-Agrimony.
Lin. spec. 1173. Reich. 3. 717. Gron. virg. 119. 178. Raii suppl. 189. 29. Krock. files. n. 1360.
Leaves in threes.
21. *Eupatorium cannabinum.* Common Hemp-Agrimony.
Lin. spec. 1173. Reich. 3. 717. hort. cliff. 396. fl. suec. n. 728. mat. med. 181. Hudf. angl. 356. With. 885. Ligbif. 464. Hall. belv. n. 136. Scop. carn. n. 1054. Leers herborn. n. 633. Neck. gallob. 343. Pollich. pal. n. 777. Allion. pedem. n. 635. Krock. files. n. 1359. Fl. dan. t. 745. Blackw. t. 110. Bauh. pin. 320. Park. theat. 595. Raii hist. 293. syn. 179.—mas. Ger. emac. 711. 2.—adulterinum. Bauh. hist. 2. 1065. 2. Fuchf. hist. 265. Matth. 1015. Mor. hist. 3. 97. f. 7. t. 13. f. 1.
β. *E. cann. folio integro, feu non digitato.* *Raii syn. 180.*
Leaves digitate.
*** Calyxes eight-flowered.
- [22. *Eupatorium coriaceum.*
Vahl symb. 3. 94.
Leaves elliptic, coriaceous, smooth, toothed on the outside.
23. *Eupatorium cinereum.*
Lin. syst. 736. suppl. 354.
Calyxes seven-flowered, leaves opposite, lanceolate, tomentose.]
24. *Eupatorium purpureum.* Purple Hemp-Agrimony.
Lin. spec. 1173. Reich. 3. 717. Cold. noveb. 180. Gron. virg. 119. Corn. canad. t. 72. Mor. t. 13. f. 4. Lour. cochinch. 487. Gertn. fruct. 2. 401.
Leaves in fours, scabrous, lanceolate-ovate, unequally serrate, petioled, wrinkled.
- [25. *Eupatorium diffusum.*
Vahl symb. 94.
Leaves ovate, serrate, three-nerved, panicle very much branched and diffused.
26. *Eupatorium nervosum.*
Swartz prodr. 111.
Leaves elliptic-lanceolate, attenuated, toothed, triple-nerved, smooth on both sides, calyxes many-flowered.
27. *Eupatorium rigidum.*
Swartz prodr. 111.
Leaves petioled, ovate, acute, serrate-toothed, rigid, rugged underneath, stem subherbaceous.]
28. *Eupatorium maculatum.* Spotted Hemp-Agrimony.
Lin. spec. 1174. syst. 736. Reich. 3. 718. amæn. 5. 288. hort. cliff. 396. Herm. par. t. 158. Mor. t. 18. f. 3. Raii suppl. 187. 15.
Leaves in fives, somewhat tomentose, lanceolate, equally serrate, veined, petioled.
- [29. *Eupatorium auriculatum.*
Vahl symb. 3. 95. t. 72.
E. tomentosum. *Lamarck encycl. 2. 407.*
Leaves ovate, toothletted, tomentose underneath, petioles eared, stem climbing, flowers in spikes.
30. *Eupatorium molle.*
Swartz prodr. 111. Aubl. guian. 800. 3. (Ageratum).
Leaves petioled, cordate, acute, subserrate, pubescent, stem herbaceous, tomentose.
31. *Eupatorium villosum.*
Swartz prodr. 111. Vahl symb. 3. 95. Sloan. jam. 1. 257. t. 161. f. 1. (Conyza).
Leaves opposite, decussated, ovate, subserrate, beneath villose-tomentose, calyxes eight to fifteen-flowered, stem shrubby.
32. *Eupatorium cordifolium.*
Swartz prodr. 111.
Leaves cordate, serrate, tomentose-hirsute underneath, petioles very short, corymbs subsessile, calyxes squarrose, stem shrubby.
33. *Eupatorium montanum.*
Swartz prodr. 111.
Leaves cordate, acute, toothletted, petioled, rugged, hirsute underneath, corymbs much spreading, stem shrubby.
34. *Eupatorium canescens.*
Vahl symb. 3. 95. t. 73.
Hoary, leaves ovate, sublobed and entire, underneath very soft and three-nerved, corymbs simple.
35. *Eupa-*

35. *Eupatorium scabrum*.
Lin. syst. 736. *suppl.* 354. *Smith. ic. ined.* 3. t. 67.
 Villose; leaves opposite, petioled, ovate, mostly entire,
 wrinkled, scabrous on the upper surface.
 **** Calyxes with fifteen or more floscules.
36. *Eupatorium perfoliatum*. *Perfoliate Hemp-Agri-*
mony.
Lin. spec. 1174. *Reich.* 3. 718. *hort. cliff.* 396.
upf. 253. *Gron. virg.* 119. *Cold. noveb.* 181.
Pluk. alm. t. 87. f. 6. *Raii suppl.* 189. 28.
Mor. hist. 3. 97. n. 6.
 Leaves connate-perfoliate, tomentose.
37. *Eupatorium cœlestinum*. *Blue-flowered Hemp-Agri-*
mony.
Lin. spec. 1174. *Reich.* 3. 718. *Gron. virg.* 94. 119.
Dill. elth. 140. t. 114. f. 139. *Pluk. mant.*
 t. 394. f. 4.
 Leaves cordate-ovate, obtusely serrate, petioled, calyxes
 many-flowered.
- [38. *Eupatorium aromaticum*. *Aromatic Hemp-Agri-*
mony.
Lin. spec. 1175. *Reich.* 3. 719. *Gron. virg.*
 120, 177. *Pluk. alm.* t. 88. f. 3. *Mor. hist.*
 3. 98. 18.
 Leaves ovate, obtusely serrate, petioled, three-nerved,
 calyxes simple.
39. *Eupatorium macrophyllum*.
Lin. spec. 1175. *Vahl symb.* 3. 95. *Plum. spec.*
 10. ic. 129.
 Leaves heart-shaped, three-nerved, serrate, underneath
 pubescent, stem also pubescent.
40. *Eupatorium Ageratoides*. *Nettle-leaved Hemp-Agri-*
mony.
Lin. syst. 736. *suppl.* 355. *hort. upf.* 254. *Gartn.*
fruct. 2. 401. *Mor. hist.* f. 7. t. 18. f. 11.
E. altissimum. *Lin. syst. edit.* 13. 614.—not 613.
Ageratum altissimum. *Lin. spec.* 1176.
Cacalia americana. *Park. theat.* 1221. 3.
 Leaves ovate, serrate, petioled, stem smooth.
41. *Eupatorium conyzoides*.
Vahl symb. 3. 96.
 Leaves ovate, attenuated, sharply serrate, three-nerved,
 smooth above, calyxes closely imbricate.]
42. *Eupatorium odoratum*. *Sweet-scented Hemp-Agri-*
mony.
Lin. spec. 1174. *Reich.* 3. 720. *aman.* 5. 405.
Brown. jam. 313. 2. *Pluk. phyt.* t. 177. f. 3.
Swartz obs. 300.
 Leaves deltoid, toothed at bottom, tomentose underneath,
 calyxes many-flowered.
- [43. *Eupatorium triplinerve*.
Vahl symb. 3. 97.
 Leaves lanceolate, triple-nerved, quite entire, smooth.
44. *Eupatorium ivæfolium*.
Lin. spec. 1174. *Reich.* 3. 720. *aman.* 5. 405.
Swartz obs. 301.
 Leaves narrow-lanceolate, three-nerved, subserrate, calyxes
 squarrose, many-flowered.
45. *Eupatorium urticæfolium*. *Nettle-leaved Hemp-Agri-*
mony.
Lin. syst. 736. *suppl.* 354. *Smith. ic. ined.* 3.
 t. 68.
 Hispid; leaves petioled, cordate, gash-serrate, panicle ter-
 minating, calyxes many-flowered, awl-shaped, some-
 what pungent.
46. *Eupatorium stoechadifolium*.
Lin. syst. 736. *suppl.* 355. *Smith. ic. ined.* 3. t. 69.
 Tomentose; leaves petioled, linear, crenate, hoary under-
 neath; panicle terminating.
47. *Eupatorium microphyllum*.
Lin. syst. 737. *suppl.* 355. *Smith. ic. ined.* 3. t. 70.
 Leaves triangular-ovate, with nine notches, tomentose
 and veined underneath, panicle conglomerate, termi-
 nating, peduncle elongated.
48. *Eupatorium squarrolum*.
Cavan. ic. hisp. 66. n. 107. t. 98.
 Leaves subcordate, ovate-acute, serrate, calyxes squar-
 rose.
49. *Eupatorium sinuatum*.
Lour. cochinch. 487.
 Leaves ovate, sinuate, hairy, alternate, calyxes eight-
 flowered, or thereabouts.

These are mostly tall-growing perennial herba-
 ceous plants; the greater part of the old sorts are
 natives of North America; many, however, of South
 America and the West Indies; whence come most
 of the new sorts: several are found wild in the East-
 Indies, and one only in Europe. The two first and
 a few other species are shrubby. Some have weak
 stems, and support themselves by twining. The
 leaves in most of the species are opposite; but in a
 few they are verticilled or alternate. The flowers
 are most frequently in corymbs at the ends of the
 stem and branches, or else axillary; the predomi-
 nant colour of the corolla is purple; some, however,
 are white.

1. This rises to the height of nine and ten feet or
 more: it has a moderately thick woody stem; and
 throws out its branches in a pretty open position.
 This shrub is frequent in the lower hills of Ligua-
 nea, in Jamaica.

Dr. Patrick Browne thought it generically distinct
 from *Eupatorium*, and therefore gave it the name of
Dalea.

It flowers here in august; and was introduced in
 1773, by Mons. Richard^b.

Swartz describes this shrub as a fathom in height,
 with a branched even stem, and long smoother
 branches. Leaves opposite and decussated, broad-
 lanceolate, four or five inches long, shining, on pe-
 tioles of a middling length. Corymbs terminating;
 branchlets opposite, decussated, subfastigate, divided
 again, two or three-parted, the last three or four-
 flowered. Flowers whitish. Calyx six or eight-
 leaved, conical, small. Corollets commonly four,
 seldom three. Stigmas reflex, cirrhose. Seeds co-
 nical-cordate, crowned with a feathered egret. This
 is remarkable for the very pleasant odour of the
 whole plant, which continues many years even when
 dried.

2. This much resembles the preceding, but the
 leaves are oblong, the flowers smaller; the calyxes
 constantly three-flowered, and the plant is almost
 void of scent. Native of Jamaica, much more
 common than the preceding in similar situations^c.]

3. The third sort rises with an upright round stalk
 to the height of three feet, sending out several
 branches towards the top, which come out regularly
 by pairs. The leaves are also in pairs, they are two
 inches and a half long, and about one third of an
 inch broad, of a light green colour, and entire.
 The flowers stand upon long peduncles at the ends
 of the branches, some sustaining one, some two,
 and others three or four flowers; they are white,
 and appear late in autumn. Native of Carolina,
 Virginia and Maryland.

[It has also been found in Japan by Thunberg.

Cultivated in the Chelsea garden before 1699.]

4. Stems annual, twisting about any neighbouring
 support to the height of five or six feet. At each
 joint two small side-branches come out, terminated
 by clusters of white flowers, so that the stalks seem
 covered with them most part of their length; but
 as these come out late in the season, unless the sum-
 mer prove warm, this plant does not flower well in
 England. Native of Virginia and Carolina.

[It is also supposed to be a native of the East-
 Indies, and to be the same with that which is figured
 by Burman *ind.* 176. t. 58. f. 2.—The Indian
 plant is smoother, and the teeth of the leaves more
 obscure^d. Cultivated in 1714^e.

5. This differs from the preceding in having the
 branches, petioles, nerves of the leaves underneath,
 and peduncles villose, the leaves less attenuated, with
 the lobes not divaricated, but parallel, the egret
 purplish, but not hoary. Native of the East-Indies.
 —There is another *Eupatorium* from Madagascar in
 every respect like this, except that it is entirely
 smooth.

6. Stem climbing: the branches have five acute

^a Browne.

^d Linn. syst.

^b Hort. kew.

^e Hort. kew. from Philof. trans.

^c Swartz.

angles, standing out. Leaves petioled, two inches long, bluntish, paler underneath, very finely and thinly haired, sometimes not toothed. Corymbs terminating the branches and branchlets: pedicels umbelled, filiform, rugged, angular. Calyx four-leaved; leaflets linear, equal, shorter than the egret, which is purplish. Native of Surinam.

7. Branches the thickness of a swan's quill, smooth, striated; branchlets axillary, a hand in length, flower-bearing. Leaves petioled, three inches in length and breadth, smooth and nerved above, beneath slightly tomentose, with stellate hairs, visible only with a magnifier, and having veins standing out; the leaves on the branchlets are an inch long, and become gradually smaller towards the top. Corymbs from the extreme axils of the leaves on the branchlets, and from the end. Peduncles opposite, angular; the partial ones umbelled, in fives, ancipital, broader at top: pedicels in threes, three-flowered; flowers sessile: at the base of the partial peduncles and flowers a pair of linear leaves. Calyx four-leaved; leaflets striated, two more tender than the others. Seeds four, angular. Egret longer than the calyx, purplish. Found in the Caribbee islands by Martfelt, and in Surinam by Rolander^f.]

8. Stalks slender, twining, eight or ten feet high, sending out small opposite branches at most of the upper joints. Lower leaves heart-shaped, ending in acute points; upper almost triangular, smooth, and of a lucid green. The upper part of the stalks has long branching stalks of white flowers, which are small and sessile. It was sent to Mr. Miller from Jamaica by Dr. Houstoun.

[9. Leaves alternate, narrower at the base, with small rounded ears bent in, green and smooth on the upper surface, tomentose and veined on the lower like Sage. The corymbs of flowers resemble those of the *Eupatoriums*^g: the fructification, however, wants to be examined more critically^h. Native of Ceylon.

10. Stems slender, round, smooth. Leaves in pairs, at two inches distance, sessile, two inches long, mucronate, resembling those of Mint, slightly toothed on the edge. Flowers terminating, corymbed, in many little heads, white, slender. Native of Virginia; whence it was sent to Bobart by the Rev. John Banister. Introduced in 1777, by Monf. Thouin. It flowers in september and october.

11. Stem erect, streaked, scarcely pubescent. Leaves opposite, subsessile, almost naked. Corymb terminating, composed of alternate, subdivided branchlets, fastigate and white. Down simple. Flowers like those of *Calea oppositifolia*ⁱ. Found in Pennsylvania by Bartram. Also in Japan by Thunberg, who describes the stem as round, villose, spotted with purple, and branched. The branches nearly opposite, decussated and patulous. The leaves ovate-oblong, sharp, pubescent, an inch or more in length.

12. Stem somewhat angular, flexuose-erect, smooth, but little branched, a foot high or more. Leaves opposite, sharp, entire at the base, pale underneath, nerved, smooth, spreading, an inch and more in length. Flowers in a fastigate and roundish panicle^k. Native of China and Japan.

13. Stem round, streaked, erect, branched, two feet and upwards in height. Branches alternate, paniced, from erect-patulous, like the stem. Leaves opposite, petioled, the lower three-lobed, the upper undivided, ovate, sharp, unequally ferrate, sometimes entire, paler underneath, nerved, scabrous, a finger's length, the upper ones gradually less. Petioles half an inch in length. Flowers on the branches and branchlets terminating, in ovate panicles, on very short peduncles.—Native of Japan^l.]

14. This rises with upright stalks about a foot high: the joints are near each other, and at every joint is a pair of leaves, of a light green colour, and ferrate. The flowers are produced in small loose panicles at the tops of the stalks; they are white,

^f Vahl.
^g Linn. mant.

^h Linn. zeyl.
ⁱ Thunberg.

^j Linn. syst.
^k Ibid.

and have two small leaves immediately under them. The flowers appear at the end of june, but the seeds seldom ripen in England. Native of New-England and Virginia.

[This was cultivated in 1731, by Mr. Miller^m.

15. Stem very smooth, and very finely streaked. Leaves an inch and half or more in length, mucronate, acuminate at the base, veined, very smooth above, beneath appearing very slightly villose with a magnifier; lobes ovate, acute, oblique behind, having frequently one or two minute teeth. Petiole shorter than the leaf. Stipules two on each side, wedge-shaped, mucronate. Corymbs axillary and terminating, compound, peduncled: having two leaves of the same structure with those on the stem under the partial peduncles; which are in threes, trifid and many-flowered: pedicels capillary, with a bristle-shaped bracte towards the flower. Calyx simple, smooth, with four linear leaflets. Corollets four. Seeds the length of the calyx, with a purplish egret. Native of Brasilⁿ.]

16. This rises with a single upright green stalk, about four feet high. At each joint are four leaves in whorls; they are six inches long, and two inches broad in the middle, lessening to both ends, terminating in acute points, rough, ferrate, and on short foot-stalks. Stem terminated by a close corymb of purple flowers, appearing in july, and continuing till september. Native of North America.

[Cultivated in 1768, by Mr. Miller^o; and probably in the last century at Oxford^p.

17. Stem shrubby, branched, striated, pubescent. Leaves petioled, opposite; petioles also pubescent. Racemes axillary, opposite: flowers spiked in whorls, four in a whorl, white. Calyx four-leaved; leaflets lanceolate-ovate, convex. Corollets four. Stamens extremely minute. Style longer. Egret bristly, with the bristles very minutely ferrate. The flowers smell like those of *Cacalia suaveolens*; the taste of the whole herb is bitter^q.

This is a climber, and stretches a great way among the neighbouring bushes. It is frequent about St. Thomas's in the East, and Manganeel, in Jamaica^r.

18. Stems straight, round, four or five feet high, purplish, striated: branchlets come out at a right angle almost over the whole stem. Leaves obscurely villose on both sides: leaflets subsessile, lanceolate, acute, sometimes gashed a little, the side ones smaller, frequently on the branches very small. Flowers in compound erect corymbs. Calyx five-leaved, five-flowered; leaflets oblong, obtuse, channelled, ciliate. Corollets purple, three times as long as the calyx. Egret sessile, white, hairy, with little prickles, apparent only to the magnifier. Flavour unpleasant and bitterish. It flowers in october^s.

19. Stem very finely striated, scarcely pubescent. Leaves petioled, alternate; the parts lanceolate, attenuated, ferrate on the outside, smooth; the upper ones undivided, lanceolate, quite entire. Corymbs from the upper axils, and at the top, on long peduncles, compound: partial peduncles and pedicels subpubescent. Calyxes smooth, five-flowered: leaflets smooth, about ten; linear, the five outer ones very short. Native of the Caribbee islands^t.]

20. Stems upright, in a moist soil seven or eight feet high. Leaves oval, rough, lanceolate, a little ferrate, in whorls of four, five or seven at each joint, three inches long, and two broad. The stems are terminated by a loose corymb of purple flowers, which appear in august, and continue till october, but are not succeeded by seeds in England.

[The leaves are shaped like those of the Sun-flower, but are many times smaller. Stem slender, cylindric, rigid, hairy on the upper part. Flowers very small, as in the other species, but they have not the calyxes so long, nor are they so exactly disposed in umbels (corymbs), but rather like the

^m Hort. kew.
ⁿ Morison.

^o Vahl.
^p Swartz.

^q Hort. kew.
^r Browne.

^s Jacquin.

^t Vahl.

common Red Valerian^a. Gronovius found it in Virginia; Vernon brought it from Mariland; Miller says that it grows in Pennsylvania; Krock^b relates that it is found in Silesia, and that it is like our common European sort, except in having leaves in threes, and white flowers. Miller's can hardly be Linneus's plant.

21. Stems three or four, and even six feet high, hairy, reddish, branched. Leaflets three or five, lanceolate, sharply serrate on the sides, entire at the base and top, slightly hairy; the middle one much larger than the others. Scales of the calyx few, not more than ten, unequal, linear, red on the edge, a little hairy. Flowers in thick umbels or corymbs at the top of the stem or branches. Florets five, and sometimes six together, of a pale red or purple colour. Seeds black, streaked, smooth, little more than a line in length. Egret sessile, with simple rays, not three lines long: the rays, when viewed with a glass, are finely toothed^c, or shortly ciliate. The stem has a pleasant aromatic smell, when cut^d. The flowers have a strong smell^e. The whole plant has a very bitter taste: a handful of it vomits and purges smartly. An ounce of the root in decoction is a full dose; and is sometimes taken in the jaundice, dropsy, &c. but it is a rough medicine, and ought to be used with caution. Boerhaave gave an infusion of this plant to foment ulcers and putrid sores. Tournefort informs us, that the Turks cure the scurvy with it.—Of all cattle goats alone seem to eat it^f.

On the banks both of running and stagnant waters, frequently in moist parts of Europe; flowering in July and August. In Johnson's edition of Gerarde it is named *Common Dutch Agrimony*.

β. Is the seedling plant, and has oval-lanceolate leaves; it sometimes flowers in that state, but not often: the second year it bears leaves in threes^g.

Professor John Martyn found this variety with simple leaves, but forgot the place. Dillenius met with it afterwards before you come to Lee in the road to Eltham^h. Mr. Woodward has since observed it near Bungay in Suffolk.

22. Leaves four inches long, mucronate, with opposite nerves, with three remote teeth on each side. Petioles an inch long, dilated at the base. Corymbs terminating, superdecumbent. Common peduncle pubescent: pedicels having minute scales scattered on them towards the base. Calyx seven-flowered; the outer scales ovate, shorter; the inner longer, linear. Egret purplish, twice as long as the calyx, almost simple. Supposed to be a native of South Americaⁱ.

23. This very much resembles an *Athanasia* in its flowers and woody rigid stem. Thunberg found it at the Cape of Good Hope^j.

24. Stem cylindric, green, but purplish at the base of the petioles. Leaves in fours or fives, green on both sides. Corymb terminating. Calyxes flesh-coloured. Corollas whitish. Anthers purple. Styles very long^k. It grows to the height of three feet or more, with a suffruticose, upright, striated stem, but little branched. The leaves are subsessile, and of a very dark green. The corymb of flowers is fastigiate. The calyx has about eight flowers^l. The receptacle is narrow, convex, scrobiculate, smooth. The seeds are small, four-cornered-columnar, acuminate at the base, with the streaks and angles rugged with dots, and whitish, the interstices smooth and livid. Egret capillary, very minutely toothletted^m. Native of North America and Cochinchina.

Cultivated in 1731, by Mr. Millerⁿ.

25. The whole plant is smooth. Leaves petioled, opposite, sharp at both ends. Panicle terminating, large, a foot long: the last pedicels capillary: at all the ramifications opposite, narrow leaves, becoming

gradually smaller. Calycine leaflets lanceolate, the outer ones shorter. Corollas eight. Egret white, the length of the calyx. Native of South America^o.

26, 27. Natives of Jamaica^p.

28. Stem annual, about two feet and a half high, purple, with many dark spots upon it. Leaves rough, placed by threes towards the bottom of the stalk, but near the top by pairs at each joint. Flowers purple, terminating in a sort of corymb, appearing in July and August, and in warm seasons ripening the seeds in autumn. [Egret simple or capillary^q. Native of North America; and cultivated here in 1656, by Mr. John Tradescant, jun.^r.

29. Stem woody: branches striated, tomentose-hoary, becoming bald with age. Leaves alternate, two inches long or less, remote, acute, minutely toothletted, except the uppermost, which are quite entire, the upper surface smooth, five-nerved, or thereabouts, somewhat dotted; hoary, simply veined. Petioles tomentose, half an inch in length, with a half-ovate, tomentose earlet at the base on each side; the last floral leaves having only a rudiment of these. Spike compound, flexuose, axillary and terminating. Spikelets alternate. Flowers usually in pairs, distant; in the axils of the branches of the spike single. Calyx smooth, with eight linear leaflets, of a brown ferruginous colour; and at the base a few minute tomentose scales. Corollas seven. Style longer by half than the corolla. Egret a little longer than the calyx, white, when magnified appearing serrate. Native of Brasil^s.

30. Native of Guiana, Jamaica, &c. Annual^t.

31. Branches softly villose. Leaves petioled, an inch and half in length or smaller, a little attenuated, either quite entire or slightly serrate, bluntish, three-nerved, the younger ones villose on both sides, the lower ones smooth on the upper surface, and somewhat rugged. Corymbs terminating, decumbent. Peduncles and pedicels villose-tomentose. At the ramifications short, bristle-shaped leaves. Calycine leaflets linear, pubescent. Corollas small, as far as sixteen. Seeds the length of the calyx, with a dirty-coloured egret, longer than the calyx^u. Native of Jamaica and Domingo^v.

32, 33. Natives of Jamaica^w.

34. This is a branching shrub; the branches having an ash-coloured bark: branchlets opposite, brachiate, spreading, hoary and very soft, as are also the tops of the branches. Leaves petioled, opposite; on the branches an inch long, very blunt, sublobed, with one or two large notches, greener above, hoary and softer beneath; on the branchlets half an inch in length, gradually smaller towards the top; the lower ones obscurely lobed, the upper ones entire, hoary and soft on both sides; all having nerves which are more conspicuous underneath, often obscurely veined, but more generally veinless. Corymbs from the ends of the branches and branchlets, few-flowered. Calyx cylindrical, subvillose: leaflets linear, obtuse, with pale streaks, the outer ones shorter. Florets ten. Seed black, when magnified appearing angular, with minute villose hairs scattered over it. Observed in the island of Santa Cruz by Pflug and West^x.

35. The stem seems to be undershrubby; it is upright, branched, roundish, streaked, villose-scabrous, leafy, many-flowered. Branchlets opposite, angular, bearing flowers at the end. Leaves opposite, on short petioles, from erect spreading, acuminate, subserrate, very seldom entire, viscid, usually three-nerved, rough, with hairs on the upper surface, and very scabrous on the lower. No stipules. Panicles terminating, upright, rough with hairs, many-flowered, contracted. Peduncles opposite. Pedicels mostly alternate. Bractes lanceolate, rough with hairs. Flowers upright. Calyx cylindric, smooth; scales oblong, obtuse, three-nerved, some-

^a Ray. ^x Woodw. Mfs. Withering, Lightfoot.

^y Ray. ^z Krock. ^a Lightf. & With.

^b Woodw. Mfs. ^c Tourn. par. edit. angl.

^d Vahl. ^e Linn. suppl. ^f Linn. spec.

^g Loureiro. ^h Gärtner. ⁱ Hort. kew.

^k Vahl.

^l Swartz.

^m Linn.

ⁿ Hort. kew.

^o Vahl.

^p Swartz.

^q Vahl.

^r Swartz.

^s Ibid.

^t Vahl.

what callous at the tip, the outer ones shorter and broader. Florets seven or eight, scarcely longer than the calyx, five-sided. Seeds black; with a down scarcely the length of the corolla, ferrate, hardly feathered, spreading.—Gathered by Mutis in New Granada^u.]

36. Stems annual, from two to three feet high, hairy. Leaves at each joint rough, from three to four inches long, and about an inch broad at their base, gradually lessening to a very acute point, dark green, and covered with short hairs. The upper part of the stalk divides into many slender peduncles, each sustaining a close cluster of white flowers, coming out in July. In warm seasons the seeds will sometimes ripen in England. Native of North America.

[Cultivated in the botanic garden in Chelsea in 1699^x.]

37. This has a creeping root, which spreads and multiplies very fast. The stalks rise about two feet high. The flowers are produced at the top of the stalks in a sort of corymb, and are of a fine blue colour.

[Dr. Dale sent the seeds from Carolina to Mr. Miller; and it was also cultivated in 1732 in the Eltham garden. Petiver and Plukenet received it from Maryland.

38. Stem round, four feet high, strict, brachiate, having the appearance of *Scutellaria*. Leaves somewhat wrinkled. Racemes terminating. Flowers twice the length of the calyx, snow-white, containing from eighteen to twenty-eight florets, the styles scarcely longer than the floret: in this circumstance it differs from the other species, and in having the calyx not imbricate, but the leaflets almost equal: thus it approaches to *Ageratum*; but it has a true down to the seeds.—Native of Virginia^y.—Cultivated in 1758, by Mr. Miller^z.]

39. Stem the thickness of a Swan's quill, striated, pubescent. Branches axillary, from erect-spreading. Leaves opposite, large, smooth above, except the veins, pubescent and paler underneath, veined, bluntly ferrate, sharp at the end; the uppermost frequently alternate. Petioles from two to three inches in length. Corymbs terminating and axillary, peduncled, decomposed, close. Calyx loosely imbricate; the leaflets lanceolate, pale green, very finely streaked. Native of the Caribbee islands^a.]

40. Stems annual, five or six feet high, towards the top putting out side branches. At the ends of the shoots the flowers are produced in large tufts, and are of a pure white; they appear in October. [Calyxine scales linear-acuminate. Receptacle convex, scrobicular, smooth. Seeds oblong, four-cornered, striated, smooth, pale, remarkably attenuated at the base. Egret capillary^b. Native of North America.

Introduced before 1640, by John Tradescant, sen.^c

41. Branches striated, pubescent. Leaves acuminate, scarcely pubescent underneath, an inch and half in length. Corymb terminating, almost simple, few-flowered: partial peduncles three-flowered; pedicels one-flowered. Calyx as in *E. odoratum*, but larger, cylindric, a little broader at top: leaflets linear, pale, with rounded brown tips. Supposed to be a native of South America^d.

42. Stem a fathom in height, shrubby, branched, even. Leaves opposite, petioled, three-nerved, dotted. Flowers terminating, subcorymbed, white. Seeds linear, slightly compressed, with a capillary egret^e.

This weakly shrubby plant is generally observed to grow among other bushes, where it frequently casts its long, slender, flexible, opposite branches to a moderate distance. The flowers are sometimes impregnated with a smell perfectly like that of the European Meadow-sweet. It is very frequent in the lower hills of Jamaica^f.—Introduced in 1780, by

William Wright, M.D. It flowers in August and September^g.

43. Stem round, smooth, very finely streaked; branches spreading, flower-bearing. Leaves opposite, attenuated at the base, subsessile, from two to three inches in length, veined. Panicle terminating, subtrichotomous: partial peduncles scarcely pubescent: the last pedicels an inch long, filiform; with a minute leaf at the base of each. Calyx many-leaved; leaflets linear, nearly equal, acute, villose, and purplish at the tip, the outmost shorter. Florets more than twenty, purple at top. Stigmas half as long again as the corollets. Egret whitish, the length of the calyx. Sent from the island of Santa Cruz by Pflug^h.

44. Stem subherbaceous, two feet high, erect, strict, branched, hispid: branches simple, elongated. Leaves petioled, opposite, somewhat rugged; lower ones lanceolate, longer, spreading. Peduncles terminating, and in the axils of the upper leaves, opposite, filiform, mostly trichotomous, but the last one-flowered. Flowers small, blue. Common in Jamaicaⁱ.

45. This at first sight is very much like a nettle, but the leaves are three-nerved at the base, as in *Scrophularia nodosa*, *Arctium Lappa*, &c.—Stem upright, branched, round, streaked, hairy, leafy. Leaves opposite, spreading very much, bluntish, deeply and irregularly ferrate, veined, hispid, with hairs on both sides, paler underneath. Petioles scarcely the length of the leaves, angular, equal. No stipules. Panicle like a cyme, upright, hairy. Pedicels alternate or crowded. Bractes linear, few. Flowers upright, pale purple. Calyx subcylindric, patulous, pubescent; scales keeled, three-nerved, attenuated at the edge; the outer ones smaller. Floscules little longer than the calyx. Seeds black. Down shorter than the corolla; viewed with a glass appearing to be minutely ferrate.

46. Stem upright, roundish, covered with a soft, thick, white down. Leaves opposite, on short petioles, spreading, blunt, flat, marked with one nerve, but with numerous little veins, divaricate, alternate; the upper surface green, with a soft down, the lower white, with a close wool, as are also the stem and petioles. No stipules. Panicles upright, somewhat like corymbs, conglomerate. Peduncles opposite, variously divided, woolly. Bractes none, except a pair of leaves smaller than the rest, at the base of each panicle. Flowers purple. Calyx cylindric, woolly at the base: scales sharp, with a green line along them, membranaceous and ciliate about the edge; the inner ones somewhat tongue-shaped, the outer lanceolate and smaller. Floscules very numerous, the length of the calyx, a little swelling, five-sided; segments from erect spreading, sharpish, quite entire, scarcely pubescent. Anthers included. Style scarcely half-cleft. Down shorter than the corolla, yellowish, scabrous.

47. Stem undershrubby, woody, ascending, a little branched, leafy, round, subhirsute. Leaves opposite, spreading, petioled, small, blunt, with the edge rolled back, having four (seldom three or five) notches on each side, and one at the end; stiffish, thickish; green and smooth on the upper surface, woolly, white, and veined like a net on the under. Petioles the length of the leaves, hairy. No stipules. Panicle on a long peduncle, resembling a corymb. Pedicels variously divided, rough-haired. Bractes two at the first ramification of the panicle, usually lanceolate, but sometimes of the same form with the leaves. Flowers purple, fewer than in the foregoing. Calyx subcylindric, scarcely pubescent at the base; all the scales lanceolate, sharp, nerved, attenuated and ciliate at the edge; the outer ones smaller and thicker. Floscules scarcely the length of the calyx, swelling at top, not angular; segments from erect spreading, bluntish, entire, closely pubescent on the outside. Anthers included. Style scarcely half-cleft. Seeds brown. Egret almost the

^u Smith.

^x Hort. kew.

^z Hort. kew.

^a Vahl.

^b Gartner.

^c Swartz.

^y Linn. spec.

^d Vahl.

^e Swartz.

^f Browne.

^g Hort. kew.

^h Vahl.

ⁱ Swartz.

length of the corolla, hardly rugged when viewed through a glass. The flowers resemble those of the preceding in structure, but differ in several characters. These three species were found in New Granada by Mutis^k.

48. Stems a fathom in height, round, subtomentose, with opposite branches. Leaves opposite, deep green above, beneath paler, somewhat tomentose. Flowers in racemes, on axillary three-flowered peduncles. Calyx cylindric, with many lanceolate-acute, striated leaflets, the outer ones reflex at the tip, and containing about twenty-four florets. Corolla twice as long as the calyx: florets greenish-yellow, with short, ovate-acute, patulous segments. Seeds small, oblong, striated, with very small hairs. Egret sessile, obscurely feathered, shorter than the corolla. Native of Mexico. Flowering in the month of march in the royal garden near Madrid, before 1791^l.

49. Stem suffruticose, three feet high, erect, hispid. Leaves toothletted. Flowers purplish, in terminating panicles. Receptacle concave. Native of the island of Mozambique on the coast of Africa^m. This belongs to the third section with eight-flowered calyxes.]

Besides these, Miller has five sorts, which were sent him from La Vera Cruz by Dr. Houstoun.

1. *Eupatorium fruticosum*, n. 6. with oblong-cordate leaves, flowers in panicles, stem shrubby climbing.—It rises to the height of ten or twelve feet: the leaves are opposite, about three inches long, and an inch and half broad, of a lucid green: the panicles are long and branching, and proceed from the side of the stalks: the flowers are white.

2. *Eupatorium betonicifolium*, n. 9. with oblong blunt crenate smooth leaves, and simple calyxes.—It rises with an upright stem near two feet high, having towards the bottom leaves of a thick substance; from the upper part, which is naked, the flowers come out in a thick panicle; their colour is blue, and they come out late in autumn. The root is biennial.

3. *Eupatorium morifolium*, n. 10. with heart-shaped ferrate leaves, and an upright tree-like stem. This rises twelve or fourteen feet high, sending out many channelled branches, covered with a brown bark. Leaves as large as those of the mulberry-tree, of a light-green colour, opposite, on petioles near two inches long. Branches terminated by four or five pairs of peduncles, which come out opposite from the joints; there is also an odd one at the end; these sustain branching panicles of white flowers, forming a long, loose, pyramidal thyrse, without any leaves intermixed, and making a fine appearance.

4. *Eupatorium punctatum*, n. 11. with ovate petioled entire leaves, stem shrubby branching, calyxes simple.—Stems near five feet high, dividing into many slender branches, the joints of which are three or four inches asunder; at each of these is a pair of leaves, about three quarters of an inch long, and half an inch broad, having several black spots on their surface, and upon long slender foot-stalks: the branches are horizontal, terminated by small bunches of white flowers. The calyxes are composed of seven narrow-lanceolate leaflets, divided to the bottom.

5. *Eupatorium paniculatum*, n. 15. with heart-shaped wrinkled crenate leaves, and a panicled stem.—This rises with an upright branching stem three feet high, sending out two side branches from every joint, almost the whole length; these are terminated by loose spikes of red flowers, as is also the principal stem. The leaves are rough, sessile, of a light green, and a little hoary.

Eupatorium conyzoides, n. 14. may probably be the same with *Kuhnia conyzoides* of Linneus.

PROPAGATION AND CULTURE.

The North American sorts (n. 3, 4, 10, 11, 14, 16, 20, 24, 28, 36, 37, 38, 40.) being hardy

^k Smith.

^l Cavanilles.

^m Loureiro.

plants the seeds may be sown in the full ground, but there must be care taken in the sowing to keep the sorts separate; for as the seeds of these plants have a light down adhering to them, they are easily displaced by the least wind; so that the best way will be to sow them in drills, but these should be but shallow, for if the seeds are buried too deep they will not grow. The bed in which these are sown should not be too much exposed to the sun, but rather have an east aspect, where the morning sun only reaches it; but where it is more exposed, it should be shaded with mats in the heat of the day, and the ground should be kept pretty moist; for as these plants generally grow in moist shady situations in their native countries, they will succeed better when they have a soil and situation somewhat like that; though as we want their heat in summer, the plants will thrive here when exposed to the sun, provided they have a moist soil, or are supplied with water in dry weather.

When the young plants come up, they must be kept clean from weeds; and where they are too close, some of them should be drawn out, to give room for the others to grow; and if these are wanted, they may be planted in another bed, where, if they are shaded and watered, they will soon take root; after which they will require no farther care but to keep them clean from weeds till the following autumn, when they may be transplanted to the places where they are to remain. As the roots of these plants spread out to a considerable distance, they should not be allowed less than three feet from any other plants, and some of the largest growing should be allowed four feet. If the soil in which they are planted is a soft gentle loam, they will thrive much better, and flower stronger than in light dry ground; in which, if they are not duly watered in dry summers, their leaves will shrink, and their stalks will not grow to half their usual height.

All these sorts have perennial roots, by which they may be propagated; and as some of them do not perfect their seeds in England, that is the only way of increasing the plants here; some of the sorts have creeping roots, sending out offsets in great plenty, so these are easily propagated; and the others may be taken up, or the heads taken off from them every other year, in doing of which there should be care taken not to cut or injure the old plants too much, which would cause them to flower weak the following year. The best time to remove these plants is in autumn, as soon as they have done growing, that they may get fresh roots before the frost comes on; but if that should happen soon after their removal, if the surface of the ground is covered with tan, or dried leaves, to keep out the frost, it will effectually secure them; and if this is done to the old plants in very severe winters, it will always preserve them; however, it may not be amiss to practise this on the young seedling plants, which have not so good roots, nor are so well established in the ground; the future culture will be only to dig the ground about them every spring, and keep them clean.

The fourth sort however is sometimes killed in very severe weather, if not covered; when the stalks therefore decay in autumn, the ground should be covered with some old tanner's bark. It multiplies very fast by its creeping roots, which may be parted every other year.

The European sort, (n. 21.) is seldom admitted into gardens, because it is very common by water sides; and wherever it is suffered to seed, the ground will be well stored with the plants to a great distance.

Those which are natives of the West Indies, and other hot countries (n. 1, 2, 5, 6, 7, 8, 9, 15, 17, 18, 19, 22, 25, 26, 27, 29, 30, 31, 32, 33, 34, 35, 39, 41, 42, 43, 44, 45, 46, 47, 48, 49.) being tender should be planted in pots, and kept constantly plunged in the tan-bed in the stove, where they will thrive and flower. These may be propagated by cutting off some of their young shoots about

about the middle of june, when they have strength, planting them in pots filled with light earth, and plunging them into a moderate hot-bed, where, if they are shaded from the sun, and gently watered as they may require it, they will put out roots in six weeks, and may then be transplanted into separate pots, and treated as the old plants.

When the seeds of these tender sorts can be had from their native countries, the plants raised that way are much preferable to those which are obtained by any other method, and will flower much stronger, but as these seeds seldom grow the first year, few persons have patience enough to wait for the plants coming up. When any of these seeds are brought over, they should be sown as soon as they arrive in pots, that they may be removed at any time; the pots should be plunged into a moderate hot-bed, and the earth kept tolerably moist; the glasses should also be shaded in the heat of the day, to prevent the earth from drying; in this hot-bed the pots may remain till autumn, when, if the plants are not up, they should be plunged between the plants in the bark-stove, and in the spring removed to a gentle hot-bed, which will bring up the plants soon after. When these are fit to remove they should be planted in separate small pots, and plunged into the hot-bed again, shading them from the sun till they have taken new root; then they should have a large share of free air admitted to them in warm weather, and frequently refreshed with water.

In the winter these plants should be more sparingly watered, especially those sorts whose stalks decay; and in the summer they should have a large share of free air admitted to them, with which management they will thrive and flower.

[EUPATORIUM. See *Ageratum*, *Agrimonia*, *Baccharis*, *Bidens*, *Chrysocoma*, *Conyza*, *Coreopsis*, *Kuhnia*, *Seriphium*, *Stoebe*.

EUPHORBIA. (*Ευφορία* of *Dioscorides*; from *Euphorbus*, physician to King *Juba*.)

Engl. *Euphorbium*, *Spurge*.

Fr. *Euphorbe*. *Titimale*.

Lin. gen. n. 609. Reich. 665. Schreb. 832.

Juss. 385. *Euphorbium*. *Isnard*. A. G. 1720.

Tithymalus. *Tourn.* t. 18. *Gertn.* t. 107.

Tithymaloides. *Tourn.* *Tithymalus*. *Mill. dict.*

Class. 11. 3. Dodecandria Trigynia.

Nat. order of *Tricoccæ*.—*Euphorbiæ*, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, inflated, somewhat coloured, four-toothed at the mouth, (in some few five-toothed,) permanent.

COR. *Petals* four, (in some few five,) turbinate, gibbous, thick, truncate, unequal in situation, alternate with the teeth of the calyx, with their claws placed on the margin of the calyx, permanent.

STAM. *Filaments* several (twelve or more) filiform, jointed, inserted into the receptacle, longer than the corolla, breaking forth at different times. *Anthers* twin, roundish.

PIST. *Germ* roundish, three-sided, pedicelled. *Styles* three, two-cleft. *Stigmas* obtuse.

PER. *Capsule* roundish, tricoccous, three-celled, starting open elastically.

SEEDS solitary, roundish.

OBS. *Euphorbium* *Isn.* has a shrubby cornered or fleshy stem, mostly leafless; prickly in some, and unarmed in others; the petals in some three-cleft.

Tithymalus *T.* has a leafy stem; most often herbaceous, always cylindric and without prickles.

Tithymaloides *T.* has the calyx bulging towards the lower side, shoe-shaped.—In some species the male flowers are first.

The petals are generally four, in some five; often on the same plant, the flowers differing in sex. These (petals) are in most glandulous, in others mooned or toothed; in a few thin like a membrane. Commonly placed in a manner beyond the calyx.

The capsule is either smooth or hairy, or warty.

ESSENTIAL CHARACTER.

Cor. four or five-petalled, placed on the calyx. Cal. one-leaved, bellying. Caps. tricoccous.

SPECIES.

* *Shrubby, prickly.*

1. *Euphorbia antiquorum*. *Triangular Spurge*.

Lin. spec. 646. Reich. 2. 435. hort. cliff. 196. upf. 138. fl. zeyl. n. 199. amæn. 3. 106. Forsk. ægypt. 93. Blackw. t. 339. Comm. hort. 1. 23. t. 12. Rheed. mal. 2. 81. t. 42. Raii hist. 873. 3.

β. *E. trigona*. Mill. dict. n. 3. Isn. aët. 1720. Comm. præl. 55. t. 5. (*Tithymalus*).

Almost naked, triangular, jointed; branches spreading.

2. *Euphorbia canariensis*. *Canary Spurge*.

Lin. spec. 646. Reich. 2. 435. hort. cliff. 196. upf. 138. amæn. 3. 107. mant. 394. Blackw. t. 340. f. 1. Comm. hort. 2. 207. t. 104. Pluk. alm. t. 320. f. 2. (*Tithymalus*).

Naked, subquadrangular; prickles in pairs.

[3. *Euphorbia edulis*. *Five-angled Spurge*.

Lour. cochinch. 298.

Prickly, leafy, five-angled, peduncles many-flowered terminating, flowers apetalous.]

4. *Euphorbia heptagona*. *Seven-angled Spurge*.

Lin. spec. 647. Reich. 2. 646. hort. cliff. 196. amæn. 3. 109. Boerb. lugdb. 1. t. 258. Brädl. succ. 2. t. 13.

Naked, seven-angled; spines solitary subulate flower-bearing.

5. *Euphorbia mammillaris*. *Warty-angled Spurge*.

Lin. spec. 647. Reich. 2. 436. amæn. 3. 108.

Isn. aët. 1720. p. 386. Comm. præl. 59. t. 9.

(*Tithymalus*).

Naked; angles tubercled, with spines between.

6. *Euphorbia cereiformis*. *Naked Spurge*.

Lin. spec. 647. Reich. 2. 436. amæn. 3. 108.

Burm. afr. 19. t. 9. f. 3. Mor. hist. 3. 345. n. 7.

Pluk. alm. t. 231. f. 1. (*Tithymalus*).

Naked, many-angled; spines solitary subulate.

7. *Euphorbia officinarum*. *Officinal Spurge*.

Lin. spec. 647. Reich. 2. 437. hort. cliff. 196.

upf. 138. amæn. 3. 107. mat. med. 120. Plerck,

ic. t. 365. Blackw. t. 340. f. 2. Isnard. aët.

1720. p. 500. t. 10. Comm. hort. 1. 21. t. 11.

Seb. thes. 1. 29. t. 19. f. 2. Ger. 1014. f. 1.

emac. 1178. 1. Park. theat. 224. 1. Mor.

hist. 3. 345. f. 7. t. 37. f. 6. Raii hist. 872. 1.

Naked, many-angled; prickles doubled.

[8. *Euphorbia triaculeata*. *Three-prickled Spurge*.

Vahl symb. 2. 53. Forsk. ægypt. 94.

Prickly naked, stem round grooved, prickles in threes.]

9. *Euphorbia neriiifolia*. *Oleander-leaved Spurge*.

Lin. spec. 648. Reich. 2. 437. hort. cliff. 196.

upf. 139. fl. zeyl. n. 200. amæn. 3. 109. Lour.

cochinch. 298. Seb. thes. 1. 18. t. 9. f. 1. Comm.

præl. 56. t. 6. hort. 1. t. 13. Brädl. succ. 3.

t. 28. Mor. hist. 3. 344. n. 2. (*Tithymalus*).

Rumph. amb. 4. 88. t. 40. (*Ligularia*). Rheed.

mal. 2. 83. t. 43. (*Ela Calli*). Burm. ind. 111.

Angles obliquely tubercled.

2. *Shrubby, unarmed*.

(Stem neither dichotomous, nor umbelliferous.)

[10. *Euphorbia meloformis*. *Melon Spurge*.

Ait. hort. kew. 2. 135.

Subglobose many-angled.]

11. *Euphorbia Caput-medusæ*. *Medusa's-head Spurge*.

Lin. spec. 648. Reich. 2. 437. hort. cliff. 197.

upf. 139. amæn. 3. 110. Ait. hort. kew. 2. 135.

α. major. *Great Medusa's-head Spurge*.

Comm. præl. 57. t. 7. *Tithymalus*.

β. minor. *Small Medusa's-head Spurge*.

E. fructus Pini. Mill. dict. n. 10. Isnard aët.

par. 1720. p. 386. Breyn. ic. 29. t. 19.

γ. *geminata*. *Least Medusa's-head Spurge*.

Burm. afr. 18. t. 9. f. 1.

Imbricate, tubercles furnished with a linear leaf, flowers subpeduncled, petals palmate.

12. *Euphorbia Clava*. *Club Spurge*.

Jacqu. ic. collect. 1. 104. Ait. hort. kew. 2. 136.

Burm. afr. 12. t. 6. f. 1. Comm. præl. 58. t. 8.

Imbricate,

- Imbricate, tubercles furnished with a lanceolate leaf, flowers peduncled, petals quite entire.*
13. *Euphorbia anacantha*. Scaly Spurge.
Ait. hort. kew. 2. 136. Isuard. act. par. 1720.
p. 387. n. 12. & 392. t. 11. Burm. afr. 16.
t. 7. f. 2.
- E. procumbens*. Mill. dict. n. 12?
Imbricate, tubercles furnished with a roundish leaflet, flowers terminating solitary sessile, petals palmate.
14. *Euphorbia mauritanica*. Barbary Spurge.
Lin. spec. 649. Reich. 2. 438. hort. cliff. 197.
upf. 140. amæn. 3. 111. Gron. orient. 160.
Dill. elth. 384. t. 289. f. 373.
Half naked shrubby filiform flaccid, leaves alternate.
- [15. *Euphorbia piscatoria*. Smooth Spearleaved Spurge.
Ait. hort. kew. 2. 137.
Shrubby strict, umbels five-cleft terminating, involucre oblong, leaves linear even.
16. *Euphorbia glabrata*. Smooth Spurge.
Swartz prodr. 76. Vahl symb. 2. 53. Sloan. jam.
2. 198. (Peplis).
Unarmed shrubby branched, leaves opposite ovate acute smooth quite entire.
17. *Euphorbia linifolia*. Flax-leaved Spurge.
Vahl symb. 2. 53.
Stem suffruticose, leaves opposite and alternate linear-lanceolate.
18. *Euphorbia cuneata*.
Vahl symb. 2. 53.
Shrubby, leaves obovate, peduncles lateral three-flowered.
19. *Euphorbia balsamifera*. Balsam Spurge.
Ait. hort. kew. 2. 137.
Shrubby strict, head terminating, leaves lanceolate, even, glaucous.]
20. *Euphorbia Tirucalli*. Indian Tree-Spurg.
Lin. spec. 649. Reich. 2. 438. hort. cliff. 197.
upf. 139. fl. zeyl. 196. amæn. 3. 111. Lour.
cochin. 299. Comm. hort. 1. 27. t. 14. Pluk.
phyt. t. 319. f. 6. (Tithymalus). Rumph.
amb. 7. 62. t. 29. Rheed. mal. 8. t. 44.
Half naked shrubby filiform, erect, branches patulous crowded in an orderly manner.
21. *Euphorbia Tithymaloides*.
Lin. spec. 649. syst. 449. Reich. 2. 438. hort.
cliff. 198. amæn. 3. 111. Jacqu. amer. 149.
t. 92. piët. 74. t. 138.
α. *E. myrtifolia*. Myrtle-leaved Spurge.
Tithymalus myrtifolius. Mill. dict. n. 1. Herm.
part. t. 234. Comm. hort. 1. 31. t. 16. Pluk.
alm. t. 230. f. 2.
β. *E. padifolia*. Laurel-leaved Spurge.
Tithymalus laurocerasifolius. Mill. dict. n. 2.
Tithymaloides laurocerasi folio non ferrato. Dill.
elth. 383. t. 288. f. 372.
Shrubby, leaves in a double row alternate ovate.
22. *Euphorbia heterophylla*. Various-leaved Spurge.
Lin. spec. 649. Reich. 2. 439. amæn. 3. 112.
Retz. obs. 6. 30. n. 48. Plum. ic. 250. t. 251.
f. 3. Pluk. alm. t. 12. f. 6. Mor. hist. 3. 336.
16. (Tithymalus).
Leaves serrate petioled difform ovate panduriform: (dichotomous with a bifid umbel.)
23. *Euphorbia cotinifolia*. Venice-Sumach-leaved Sp.
Lin. spec. 650. syst. 449. Reich. 2. 439. amæn. 3.
112. hort. cliff. 198. Pluk. alm. t. 230. f. 3.
Seb. thes. 1. 75. t. 46. f. 4. Comm. hort. 1. 29.
t. 15. (Tithymalus).
Leaves opposite subcordate petioled emarginate quite entire, stem shrubby.
24. *Euphorbia ocymoides*. Basil-leaved Spurge.
Lin. spec. 650. Reich. 2. 439. amæn. 3. 112.
Herbaceous branching, leaves subcordate quite entire shorter than the petiole, flowers solitary.
- [25. *Euphorbia lævigata*.
Vahl symb. 2. 54.
Shrubby branched, leaves opposite oblong obtuse smooth quite entire.
3. Dichotomous.
(With a bifid umbel, or none.)
26. *Euphorbia origanoides*. Marjoram Spurge.
Lin. spec. 650. Reich. 2. 440. amæn. 2. 114.
- Leaves ferrulate ovate obtuse three-nerved, panicle terminating, stems simple.*
27. *Euphorbia Atoto*.
Forst. fl. austral. n. 207.
Dichotomous, leaves ovate quite entire, umbel terminating.]
28. *Euphorbia hypericifolia*. St. John's-wort-leaved Spurge.
Lin. spec. 650. Reich. 2. 440. amæn. 3. 113.
hort. cliff. 198. upf. 143. Swartz obs. 194.
Brown. jam. 235. 2. Sloan. jam. 1. 197. 14.
t. 126. Comm. præl. t. 60. (Tithymalus).
Leaves ferrate oval-oblong smooth, corymbs terminating, branches divaricate.
- [29. *Euphorbia mellifera*. Honey-bearing Spurge.
Ait. hort. kew. 3. 493.
Leaves scattered lanceolate acute even, peduncles dichotomous, capsules muricated.
30. *Euphorbia prostrata*. Trailing red Spurge.
Ait. hort. kew. 2. 139.
Leaves oval obscurely serrate, peduncles axillary with about three flowers, stems diffused smooth.
31. *Euphorbia maculata*. Spotted Spurge.
Lin. spec. 652. syst. 450. Reich. 2. 440. Jacqu.
hort. 2. 87. t. 186. Pluk. phyt. t. 65. f. 8.
(Tithymalus). Sloan. jam. 1. 198. (Chamæ-
fycé).
Leaves serrate oblong hairy, flowers axillary solitary, branches patulous.
32. *Euphorbia hirta*. Creeping hairy Spurge.
Lin. spec. 651. Reich. 2. 441. amæn. 3. 114.
fl. zeyl. n. 197. Swartz obs. 195. Brown. jam.
234. Burm. zeyl. 223. t. 104. (Tithymalus).
Rumph. amb. 6. 54. t. 23. f. 2. (Efula).
Leaves ferrulate ovate acuminate, peduncles in axillary heads, stems hairy.
33. *Euphorbia pilulifera*.
Lin. spec. 651. Reich. 2. 441. amæn. 3. 115.
Burm. zeyl. 224. t. 105. f. 1. Pet. gaz. t. 80.
f. 14. (Tithymalus).
Leaves serrate oval-oblong, peduncles in two axillary heads, stem upright.
34. *Euphorbia hyssopifolia*. Hyssop-leaved Spurge.
Lin. spec. 631. Reich. 2. 441. Brown. jam.
235. 4.
Leaves subcrenate linear, flowers fascicled terminating, stem upright.
35. *Euphorbia thymifolia*. Thyme-leaved Spurge.
Lin. spec. 652. Reich. 2. 441. amæn. 3. 115.
fl. zeyl. n. 198. Pluk. alm. t. 113. f. 2. Burm.
zeyl. 225. t. 105. f. 3. (Tithymalus).
Leaves serrate oval-oblong, heads axillary glomerate subsessile, stems procumbent.
36. *Euphorbia parviflora*.
Lin. spec. 652. syst. 450. Reich. 2. 442. Burm.
zeyl. 224. t. 105. f. 2.
Leaves serrate oblong smooth, flowers solitary, stem erectish alternately branched.
37. *Euphorbia canescens*.
Lin. spec. 652. Reich. 2. 442. Cavan. hisp. 46.
n. 69. t. 63.
Leaves entire roundish hairy, flowers solitary axillary, stems procumbent.
38. *Euphorbia Chamæfycé*. Crenated Annual Spurge.
Lin. spec. 652. Reich. 2. 442. mant. 393. amæn.
3. 115. hort. cliff. 198. Gmel. fib. 2. 237.
Gron. orient. 160. Brown. jam. 236. 8. Swartz
obs. 196. Villars dauph. 3. 821.
Chamæfycé. Bauh. pin. 293. Clust. hist. 2. 188.
Leaves crenulate roundish smooth, flowers solitary axillary, stems procumbent.
39. *Euphorbia rubra*.
Cavan. hisp. 21. n. 34. t. 34. f. 1.
Leaves wedge-shaped emarginate imbricate, umbels bifid, corollas five-petalled.
40. *Euphorbia granulata*.
Vahl symb. 2. 54. Forst. ægypt. 94.
Dichotomous, leaves opposite oblong quite entire, flowers solitary, axillary, stems procumbent.
41. *Euphorbia Peplis*. Purple Spurge.
Lin. spec. 652. Reich. 2. 442. amæn. 3. 115.
Gron. orient. 163. Hudf. angl. 207. With. 494.
Krock.

- Krock. files. n. 722. Vahl symb. 2. 54. Forst. ægypt. 93. Villars dauph. 3. 822.
- Tithymalus* Peplis. Scop. carn. n. 583.
- T. maritimus* supinus annuus, Peplis dictus. Raii syn. 313.
- Peplis. Clus. hist. 2. 187. Camer. epit. 970. Matth. 1260. Baub. hist. 3. 668. Ger. 406. 16. emac. 503. 20. Park. theat. 194. 7. Raii hist. 869.—maritima fol. obtuso. Baub. pin. 293. Mor. hist. 3. 340. f. 10. t. 2. f. 18. Petiv. brit. t. 53. f. 12.
- Peplion. Dalech. hist. 1659.
- Leaves quite entire semicordate, flowers solitary axillary, stems procumbent.
42. *Euphorbia polygonifolia*. Knot-grass-leaved Sp. Lin. spec. 653. Reich. 2. 443. amæn. 3. 116. Gron. virg. 58. Raii suppl. 431. n. 511.
- Leaves opposite quite entire lanceolate obtuse, flowers solitary axillary, stems procumbent.
43. *Euphorbia graminea*. Lin. syst. 450. Reich. 2. 443. mant. 74. Jacq. amer. 151. pict. 74. t. 139. obs. 1. 5. t. 31. Brown. jam. 253. 3. Swartz obs. 196?
- Leaves lanceolate elliptic petioled quite entire, stem upright, peduncles dichotomous.
44. *Euphorbia Ipecacuanhæ*. Lin. spec. 653. Reich. 2. 443. amæn. 3. 116. Gron. virg. 58. (*Tithymalus*).
- Leaves quite entire lanceolate, peduncles axillary one-flowered equalling the leaves, stem upright.
45. *Euphorbia portulacoides*. Purslain-leaved Spurge. Lin. spec. 653. Reich. 2. 443. amæn. 3. 117.
- Leaves quite entire oval retuse, peduncles axillary, one-flowered, equalling the leaves, stem upright.
46. *Euphorbia myrtifolia*. Myrtle-leaved Spurge. Lin. spec. 653. Reich. 2. 443. Swartz obs. 197.
- Leaves quite entire, roundish emarginate hoary underneath, flowers solitary, stem upright.
47. *Euphorbia imbricata*. Vahl symb. 2. 54.
- Umbel dichotomous bifid, involucels roundish mucronate, leaves obovate imbricate serrulate, stem fruticulose.
4. Umbel trifid.
48. *Euphorbia Peplus*. Petty Spurge. Lin. spec. 653. Reich. 2. 444. amæn. 3. 117. hort. cliff. 199. fl. succ. n. 426. Gärtn. fruct. 2. 115. Hudf. angl. 208. With. 495. Curtis lond. 1. 35. Lightf. scot. 249. Hall. helv. n. 1049. (*Tithymalus*). Neck. gallob. 211. Pollich pal. n. 455. Leers herb. n. 357. Krock. files. n. 723. Berg. phyt. 57. Retz. obs. 3. 32. Villars dauph. 3. 822.
- Peplus. Dod. purg. 163. pempt. 375. 2. Tabern. 597.—f. *Esula rotunda*. Baub. pin. 292. Lob. ic. 362. Ger. 406. 15. emac. 503. 19. Baub. hist. 3. 669. Raii hist. 869. Mor. f. 10. t. 2. f. 11. Petiv. brit. t. 53. f. 11.
- Esula rotunda*, f. *Peplus*. Park. theat. 194. 6. Rivin. tetr. t. 118.
- Tithymalus* Peplus. Raii syn. 313. 11.
- β. *Peplus minor*. Baub. hist. 3. 670. Retz. obs. 3. 32.
- E. peploides*. Allion. pedem. n. 1032.
- Umbel dichotomous, involucels ovate, leaves quite entire obovate petioled.
49. *Euphorbia falcata*. Lin. spec. 654. syst. 451. Reich. 2. 444. mant. 393. amæn. 3. 118. Pollich pal. n. 456. Jacq. austr. 2. t. 121. Krock. files. n. 724. Villars dauph. 3. 823. (*Tithymalus*). Barrel. ic. 751. (*Pithyusa*). Mor. hist. 339. (*Tithymalus*).
- Umbel dichotomous, involucels subcordate mucronate, leaves lanceolate bluntish.
50. *Euphorbia exigua*. Dwarf Spurge. Lin. spec. 654. syst. 451. Reich. 2. 444. amæn. 3. 118. Hudf. angl. 208. With. 495. Curt. lond. 4. 36. Lightf. 250. Relb. cant. n. 351. Neck. gallob. 211. Pollich pal. n. 457. Leers herb. n. 358. Krock. files. n. 725. Villars dauph. 3. 824. Fl. dan. t. 592. Weig. obs. 31. Hall. helv. n. 1048. (*Tithymalus*).
- α. *E. exigua acuta*. Lin. hort. cliff. 199. ups. 143.

- Retz. obs. 1. 19.
- Tithymalus* f. *Esula exigua*. Baub. pin. 291.
- T. leptophyllus*. Camer. epit. 966. Park. theat. 193. 5. Raii hist. 868. syn. 313. Pet. brit. t. 53. f. 9.
- Esula exigua* Tragi. 296. Ger. 503. 17. Mor. f. 10. t. 2. f. 5.
- β. *E. exigua retusa*.
- E. retusa*. Cavan. ic. hisp. 21. t. 34. f. 3.
- T. f. E. exigua*, fol. obtusis. Baub. pin. 291. prodr. 133. 2. Krock. files. β.
- An *Tithymalus* fegetum longifolius. Raii hist. 868?
- γ. *T. exiguus saxatilis*. Baub. pin. 291. prodr. 133. 3. Magn. monsp. 259. t. 258.
- Umbel dichotomous; involucels lanceolate, leaves linear.
51. *Euphorbia obliterated*. Swartz prodr. 76. Jacq. amer. 151. 5.
- Leaves oblong trapezoid serrate pubescent, obliterated on one side of the base.
52. *Euphorbia tuberosa*. Lin. spec. 654. Reich. 2. 445. amæn. 3. 117. Buxb. cent. 2. 27. t. 23. Burm. afr. 9. t. 4. Raii suppl. 433. n. 6.
- Involucres four-leaved, stem-naked, leaves oblong emarginate.
53. *Euphorbia divaricata*. Lin. syst. 451. Jacq. collect. 1. icon rar.
- Umbel trifid or quadrifid, stem shrubby trichotomous.]
5. Umbel quadrifid.
54. *Euphorbia Lathyris*. Caper Spurge. Lin. spec. 655. Reich. 2. 445. amæn. 3. 119. mat. med. 121. hort. ups. 140. cliff. 198. Gmel. fib. 2. 230. Allion. pedem. n. 1036. Krock. files. n. 726. Mill. illustr. Plenck, ic. t. 366. Villars dauph. 3. 824.
- Tithymalus* Lathyris. Scop. carn. n. 571. Hall. helv. n. 1044.—major annuus glaucifolius Mor. hist. 339. f. 10. t. 2. f. 1.
- Lathyris. Camer. epit. 968. Fuchs. hist. 454. Matth. 1259. Blackw. t. 123.—major. Baub. pin. 293. Raii hist. 866. Ger. 405. 13. emac. 503. 18. Park. theat. 191. 1, 2.
- Umbel dichotomous, leaves opposite quite entire.
- [55. *Euphorbia Terracina*. Lin. spec. 654. Reich. 2. 446. Barrel. ic. 833. Villars dauph. 3. 823.
- Umbel dichotomous, leaves alternate lanceolate retuse mucronate.
56. *Euphorbia diffusa*. Spreading Spurge. Lin. syst. 451. Jacq. misc. 2. 311.
- Umbel four or five-cleft dichotomous, stem very much diffused, leaves wedge-form quite entire alternate.]
57. *Euphorbia Apios*. Pear-rooted Spurge. Lin. spec. 656. syst. 451. Reich. 2. 446. amæn. 3. 120.
- Tithymalus tuberosa* radice. Clus. hist. 2. 190.—pyriformi. Baub. pin. 292. Mor. f. 10. t. 3. f. 12.
- Apios. Baub. hist. 3. 666. Raii hist. 870.—vera Ger. 407. 18. emac. 504. 22.—f. *Tithymalus tuberosus* Park. 194. 11. f. 195. 10.
- Umbel four-cleft bifid, involucels kidney-form, the first obcordate.
- [58. *Euphorbia læta*. Mezerion-leaved Spurge. Ait. hort. kew. 2. 141.
- Umbel quadrifid or quinquesid, twice dichotomous; first involucels oblong, upper ones rhomb-roundish; leaves linear-lanceolate subemarginate quite entire.
6. Umbel quinquesid.
59. *Euphorbia genistoides*. Broom-like Spurge. Lin. syst. 452. Reich. 2. 447. mant. 564. Berg. cap. 146.
- Umbel quinquesid bifid, involucels ovate, leaves linear erect, stem becoming shrubby.
60. *Euphorbia spinosa*. Prickly Spurge. Lin. spec. 655. syst. 452. Reich. 2. 447. amæn. 3. 120. hort. cliff. 201. Sauv. monsp. 51. Herm. lugdb. t. 601. Baub. pin. 291. 3. (*Tithymalus*). Mor. 342. t. 1. f. 8.

- Umbel subquinquesid, simple; involucels ovate, the primary ones three-leaved; leaves oblong quite entire, stem shrubby.*
61. *Euphorbia epithymoides*.
Lin. spec. 656. Reich. 2. 447. Jacqu. austr. 5. t. 344. Allion pedem. n. 1038.
Tithymalus epithymi fructu. Col. ecphr. 1. 52. t. 51.
Peplios altera species. Baub. pin. 292.
Umbel quinquesid bifid; involucels ovate; leaves lanceolate obtuse villose underneath.
62. *Euphorbia Nicæensis*.
Allion. pedem. n. 1039. t. 69. f. 1. Vabl. symb. 3. 63.
Umbel quinquesid bifid, involucels cordate roundish quite entire, leaves lanceolate mucronate subcoriaceous.
63. *Euphorbia dulcis*. Sweet Spurge.
Lin. spec. 656. syst. 452. Reich. 2. 448. mant. 393. amæn. 3. 122. Jacqu. austr. 3. 8. t. 213. Leers herborn. n. 359. Krock files. n. 727. Vabl. symb. 2. 55. Villars dauph. 3. 825. Ger. prov. 537. n. 7.
Tithymalus dulcis. Scop. carn. n. 573. Hall. helv. n. 1051. Barrel. ic. 840. Riv. t. 117. (Esula.) Lob. ic. 358. (Pithyusa.)—montanus non acris. Baub. pin. 292.—Esula dulcis Tragi. Matth. 1656.
Umbel quinquesid bifid; involucels subovate, leaves lanceolate obtuse quite entire.
64. *Euphorbia carniolica*.
Lin. syst. 452. Jacqu. austr. 5. app. t. 14.
Tithymalus pilosus. Scop. carn. n. 576. t. 21.
Rays of the umbel nodding; involucre involucels and leaves lanceolate.
65. *Euphorbia Pithyusa*. Juniper-leaved Spurge.
Lin. spec. 656. Reich. 2. 448. amæn. 3. 122.
Tithymalus Pithyusa. Scop. carn. n. 575.
T. fol. brevibus aculeatis. Baub. pin. 292.
T. maritimus, juniperi folio. Bocc. sic. 9. t. 5. Mor. 337. f. 10. t. 1. f. 25.
Pithyusa. Dalech. hist. 1652.
Umbel quinquesid bifid; involucels ovate mucronate; leaves lanceolate, the lowest rolled in, imbricate backwards.
66. *Euphorbia portlandica*. Portland Spurge.
Lin. spec. 656. syst. 452. Reich. 2. 448. Hudf. angl. 208. With. 496. Barrel. ic. 822. (Tithymalus.)
Tithymalus maritimus minor. Raii syn. 313. t. 24. f. 6.
Umbel dichotomous; involucels subcordate concave, leaves linear-lanceolate smooth spreading.
67. *Euphorbia saxatilis*, Rock Spurge.
Lin. syst. 452. Jacqu. austr. 4. t. 345.
Umbel quinquesid bifid; involucre and involucels cordate; leaves oblong smooth.
68. *Euphorbia paralias*. Sea Spurge.
Lin. spec. 657. syst. 452. Reich. 2. 449. amæn. 3. 129. hort. cliff. 200. Hudf. angl. 209. With. 496. Engl. bot. t. 195. Jacqu. hort. 2. t. 188. Gron. orient. 162. Krock. files. n. 728.
Tithymalus paralias. Scop. carn. n. 581. Hall. helv. n. 1055. Camer. epit. 962. Ger. 401. f. 1. emac. 498. f. 1. Park. theat. 184. Baub. hist. 3. 674. f. 675. Raii hist. 865. syn. 312. Petiv. brit. t. 53. f. 8.
T. maritimus. Baub. pin. 291. Dod. pempt. 370. f. 1, 2. Mor. f. 10. t. 1. f. 24.
Umbel subquinquesid bifid; involucels cordate reniform; leaves imbricate upwards.
69. *Euphorbia juncea*. Linear-leaved Spurge.
Ait. hort. kew. 2. 142.
Umbel dichotomous; leaves and involucre linear-lanceolate acute; involucels ovate-oblong acuminate.]
70. *Euphorbia aleppica*.
Lin. spec. 657. Reich. 2. 449. amæn. 3. 122. Mor. hist. 3. 338.
Tithymalus cyparissius. Alp. exot. 65. t. 64.
Umbel dichotomous; involucels ovate-lanceolate mucronate; lower leaves bristle-form.
- [71. *Euphorbia pinea*.
Lin. syst. 452. Reich. 2. 450.

- Umbel dichotomous; involucels cordate; leaves linear acuminate crowded; capsules smoothish.*
72. *Euphorbia segetalis*. Corn Spurge.
Lin. spec. 657. syst. 452. Reich. 2. 450. mant. 393. Ger. prov. 538. Jacqu. austr. 5. t. 450. Krock. files. n. 729. Villars dauph. 3. 828.
Umbel dichotomous; involucels cordate acute; leaves linear-lanceolate, the upper ones broader.
73. *Euphorbia taurinensis*.
Allion. pedem. n. 1046. t. 83. f. 2. Villars dauph. 3. 827.
Umbel quinquesid bifid; involucre four-leaved hanging down; leaves linear-lanceolate; stem branched.
74. *Euphorbia helioscopia*. Sun-Spurge, or Wartwort.
Lin. spec. 658. syst. 453. Reich. 3. 450. amæn. 3. 124. hort. cliff. 198. fl. suec. n. 425. lapp. 220. Hudf. angl. 209. With. 497. Lightf. 250. Curtis lond. 1. 36. abr. t. 23. Neck. gallob. 212. Pollich. pal. n. 458. Fl. dan. t. 725. Krock. files. n. 730. Plénc, ic. t. 369. Villars dauph. 3. 828.
Tithymalus helioscopius. Scop. carn. n. 579. Hall. helv. n. 1050. Baub. pin. 291. Fuchs. hist. 811. Camer. epit. 963. Dod. purg. 145. Matth. 1644. Ger. 401. 2. emac. 498. 2. Park. theat. 189. Petiv. brit. t. 53. f. 10. Mor. hist. 339. f. 10. t. 2. f. 9. Baub. hist. 3. 669. 1. Raii hist. 869. syn. 313.
Umbel quinquesid trifid dichotomous; involucels obovate; leaves wedge-form serrate smooth, capsules even.
75. *Euphorbia pubescens*.
Vabl. symb. 2. 55.
Umbel quinquesid trichotomous, involucels semicordate, leaves wedge-shaped hairy ferrulate, capsules muricate.
76. *Euphorbia ferrata*. Narrow notch-leaved Spurge.
Lin. spec. 658. Reich. 2. 451. amæn. 3. 125. hort. cliff. 200. ups. 141. Vabl. symb. 2. 55. Forsk. ægypt. 93. t. 13. Villars dauph. 3. 828. Ger. prov. 539.
Tithymalus characias, fol. ferrato. Baub. pin. 290.
T. myrtites valentinus. Clus. hist. 2. 189.
Umbel quinquesid trifid dichotomous; involucels two-leaved kidney-form; leaves stem-clasping cordate serrate.
77. *Euphorbia verrucosa*. Warty-fruited Spurge.
Lin. spec. 658. syst. 453. Reich. 2. 451. mant. 393. amæn. 3. 120. Hudf. angl. 209. With. 497. Relb. cant. n. 353. Krock. files. n. 731. Villars dauph. 3. 829.
Tithymalus verrucosus. Scop. carn. n. 577. Hall. helv. n. 1052. Baub. pin. 291. 5. Mor. f. 10. t. 3. f. 3. Baub. hist. 3. 673. 1. Petiv. brit. t. 53. f. 6. Raii hist. 871. syn. 312.
Umbel quinquesid, subtrifid, bifid; involucels ovate; leaves lanceolate serrate villose; capsules warted.
78. *Euphorbia punicea*. Scarlet-flowered Spurge.
Swartz prodr. 76. Ait. hort. kew. 2. 143. Smith ic. rar. t. 3.
Umbel quinquesid, trifid; involucels oval acuminate coloured; capsules smooth; leaves obovate-lanceolate.
79. *Euphorbia corollata*.
Lin. spec. 658. Reich. 2. 451. amæn. 3. 122. Gron. virg. 58. Pluk. mant. t. 446. f. 3. (Tithymalus.)
Umbel quinquesid, trifid, dichotomous; involucels and leaves oblong obtuse; petals membranaceous.
80. *Euphorbia coralloides*. Coral-stalked Spurge.
Lin. spec. 659. Reich. 2. 452. amæn. 3. 123. hort. ups. 142.
Umbel quinquesid trifid dichotomous, involucels ovate, leaves lanceolate, capsules woolly.
81. *Euphorbia pilosa*. Hairy Spurge.
Lin. spec. 659. syst. 453. Reich. 2. 452. Gmel. fib. 2. 226. t. 93. Barrel. ic. 885.
Umbel quinquesid, trifid, bifid; involucels ovate; petals entire; leaves lanceolate somewhat hairy ferrulate at the tip.]
82. *Euphorbia orientalis*. Willow-leaved Spurge.
Lin. spec. 660. Reich. 2. 453. amæn. 3. 123.
Umbel quinquesid quadrifid dichotomous; involucels roundish acute; leaves lanceolate,

- [83. *Euphorbia platyphyllos*. Broad notch-leaved Spurge. *Lin. spec.* 660. *syft.* 453. *Reich.* 2. 453. *amæn.* 3. 124. *hort. ups.* 141. *Huds. angl.* 209. *With.* 498. *Jacqu. austr.* 4. 40. *t.* 376. *Pollich. pal.* n. 459. *Krock. files.* 733. *Villars dauph.* 3. 829.
Tithymalus platyphyllos. *Scop. carn.* n. 578. *Hall. belv.* n. 1053. *Fuchs hist.* 813. *Baub. hist.* 3. 670. *Raii hist.* 870. 32. *syn.* 312.
T. arvensis latifolius germanicus. *Baub. pin.* 291. *Mor. f.* 10. *t.* 3. *f.* 1.
Umbel quinquefid trifid dichotomous; involucels hairy along the keel; leaves serrate lanceolate; capsules warted.
84. *Euphorbia glauca*.
Forst. fl. austr. n. 208.
Umbel subquinquefid trifid; involucre and involucels ovate; leaves scattered oblong-lanceolate quite entire; stem frutescent.
7. *Umbel multifid.*
85. *Euphorbia Esula*. Gromwell-leaved Spurge.
Lin. spec. 660. *syft.* 453. *Reich.* 2. 454. *mant.* 394. *amæn.* 3. 127. *hort. ups.* 141. *Pollich. pal.* n. 460. *Villars dauph.* 3. 830. *Krock. files.* n. 735. *Plenck, ic. t.* 370.
Tithymalus Esula. *Scop. carn.* n. 580. *Hall. belv.* n. 1046.
T. fol. pini &c. *Baub. pin.* 292.
T. Cyparissiaefimilis, Pityusa multis. *Baub. hist.* 3. 665. *Raii hist.* 867.
T. amygdaloides angustifolius. *Tabern. ic.* 541. *Vaill. par.* 192. *Mart. Tourn. par.*
Esula. *Riv. tetr.* 227.—minor. *Dalech. hist.* 1653. *Dod. pempt.* 374. *Blackw. t.* 163. *f.* 1, 2.
Umbel multifid bifid; involucels subcordate; petals obscurely two-horned; leaves on the barren and fertile branches the same.
86. *Euphorbia Seguierii*.
Scop. carn. n. 574. *t.* 20. *Allion. n.* 1054.
Tithymalus fol. brevibus aculeatis. *Baub. pin.* 292. *Seguier veron.* 1. 154. *t.* 3. *f.* 1. *Mor. f.* 10. *t.* 2. *f.* 28.
Umbel multifid bifid dichotomous; involucels kidney-form acuminate; petals mooned; capsules smooth; leaves lanceolate acuminate.
87. *Euphorbia gerardiana*.
Lin. syft. 454. *Jacqu. austr.* 5. *t.* 436. *Ger. prov.* 540.
Umbel dichotomous; involucels roundish; petals quite entire; branches none; leaves all of one form.
88. *Euphorbia Cyparissias*. Cypress Spurge.
Lin. spec. 661. *syft.* 454. *Reich.* 2. 454. *mant.* 394. *amæn.* 3. 127. *hort. cliff.* 199. *ups.* 142. *Weigel obs.* 31. *Pollich. pal.* n. 461. *Krock. files.* n. 734. *Plenck, ic. t.* 367. *Blackw. t.* 163. *f.* 3. *Jacqu. austr.* 5. 16. *t.* 435. *Villars dauph.* 3. 830.
Tithymalus Cyparissias. *Scop. carn.* n. 582. *Hall. belv.* n. 1047. *Baub. pin.* 291. *Dalech. hist.* 1644. *Tabern. hist.* 990. *Baub. hist.* 3. 663. *Ger.* 402. 5. *emac.* 499. 5. *Park. theat.* 193. *f.* 3. *Mor. f.* 10. *t.* 2. *f.* 29. *Raii hist.* 867.
Umbel dichotomous; involucels subcordate; branches barren with setaceous, fertile with lanceolate leaves.]
89. *Euphorbia Myrsinites*. Glaucous Spurge.
Lin. spec. 661. *Reich.* 2. 455. *amæn.* 3. 128. *hort. cliff.* 199. *ups.* 141.
Tithymalis Myrsinites. *Dod. pempt.* 369. *Baub. hist.* 3. 674. *Park. theat.* 187. 7. *Raii hist.* 865. —*latifolius*. *Baub. pin.* 290. *Ger. emac.* 498. 3. —*legitimus*. *Clus. hist.* 2. 189.
Umbel with about eight bifid rays; involucels subovate; leaves spatulate spreading fleshy mucronate scabrous at the edge.
90. *Euphorbia palustris*. Marsh Spurge.
Lin. spec. 662. *syft.* 454. *Reich.* 2. 456. *mant.* 394. *amæn.* 3. 126. *mat. med.* 121. *hort. cliff.* 200. *fl. suec. n.* 427. *Plenck, ic. t.* 368. *Vill. dauph.* 3. 831. *Pollich. pal.* n. 462. *Jacqu. misc.* 2. 314. *fl. dan. t.* 866. *Krock. files. n.* 737. *Hall. belv. n.* 1054. (*Tithymalus*.)

- Esula palustris*. *Riv. tetr.* 230.—major. *Dalech. hist.* 1653. *Dod. purg.* 158.—*germanica*. *Ger.* 404. 11. *emac.* 501. 14.
Tithymalus palustris fruticosus. *Baub. pin.* 292. *Mor. f.* 10. *t.* 2. *f.* 1. *row.* 3.
T. magnus multicaulis, f. *E. major*. *Baub. hist.* 3. 671. *Raii hist.* 864.
Umbel multifid subtrifid bifid; involucels ovate; leaves lanceolate; branches barren.
91. *Euphorbia hibernica*. Irish Spurge.
Lin. spec. 662. *Reich.* 2. 456. *amæn.* 3. 128. *Huds. angl.* 210. *With.* 499. *Krock. files. n.* 738.
Tithymalus hibernicus, *vasculis muricatis erectis*. *Dill. elth.* 387. *t.* 290. *f.* 374.
T. hibernicus. *Merr. pin.* *Raii syn.* 312. *hist.* 1888. *suppl.* 666.
Umbel multifid bifid; involucels ovate; leaves oblong emarginate somewhat villose underneath; stem simple; capsules warted-ramentaceous.
92. *Euphorbia dendroides*. European Tree-Spurge.
Lin. spec. 662. *Reich.* 2. 456. *amæn.* 3. 128.
Tithymalus myrtifolius arboreus. *Baub. pin.* 290. *Mor. f.* 10. *t.* 1. *f.* 12.
T. arboreus. *Alp. exot.* *Raii hist.* 864.
T. dendroides. *Camer. epit.* 965. *Baub. hist.* 3. 675.
Umbel dichotomous; involucels subcordate, the primary ones three-leaved; stem arboreous.
93. *Euphorbia amygdaloides*. Wood Spurge.
Lin. spec. 662. *Reich.* 2. 457. *amæn.* 3. 126. *mant.* 394. *Huds. angl.* 210. *With.* 499. *Engl. bot. t.* 256. *Krock. files. n.* 739. *Villars dauph.* 3. 832.
T. characias amygdaloides. *Baub. pin.* 290. *Ger.* 403. 9. *emac.* 500. 9. *Mor. f.* 10. *t.* 1. *f.* 1. *Raii hist.* 863.—*vulgaris*. *Park. theat.* 186. 1.
T. sylvaticus toto anno folia retinens. *Baub. hist.* 3. 671.
Esula caule crasso. *Riv. tetr.* 227.
Umbel dichotomous; involucels perfoliate orbiculate; leaves obtuse.
94. *Euphorbia sylvatica*.
Lin. spec. 663. *Reich.* 2. 457. *mant.* 394. *Jacqu. austr.* 4. *t.* 375. *Pollich. pal.* n. 463. *Krock. files. n.* 741. *Villars dauph.* 3. 832.
Tithymalus sylvaticus. *Scop. carn.* n. 572. *Hall. belv. n.* 1045.
T. lunato flore. *Col. ecphr.* 2. 56. *t.* 57.
T. sylvaticus, lunato fl. *Baub. pin.* 290. *Mor.* 335. *f.* 10. *t.* 1. *f.* 3.
Ger. em. 499. 8. *Park.* 186. 2. *Baub. hist.* 3. 672. *With.?*
Umbel quinquefid bifid; involucels perfoliate subcordate, leaves lanceolate quite entire.
95. *Euphorbia Characias*. Red Spurge.
Lin. spec. 662. *Reich.* 2. 457. *mant.* 394. *amæn.* 3. 126. *hort. cliff.* 199. *ups.* 142. *Huds. angl.* 211. *With.* 500. *Jacqu. ic. collect.* 1. 57. *Krock. files. n.* 740. *Villars dauph.* 3. 831.
Riv. tetr. t. 115. *Esula caulo crasso*. *With.*
Umbel multifid bifid; involucels perfoliate emarginate; leaves quite entire; stem becoming shrubby.]
96. *Euphorbia cretica*.
Mill. dict. n. 28.
Tithymalus creticus characias angustifolius villosus & incanus. *Tournef. cor.* 1.
Umbel multifid bifid, involucels orbiculate, leaves linear-lanceolate villose.
- [97. *Euphorbia linearis*.
Retz. obs. 3. 32. *n.* 56.
Dichotomous; peduncles solitary; leaves opposite, linear, quite entire.
98. *Euphorbia rosea*.
Retz. obs. 4. 26. *n.* 82.
Dichotomous; leaves obovate, oblique at the base, tooth-letted at the tip; stem depressed diffused.

DESCRIPTIONS, &c.

These are milky plants, mostly herbaceous, several however shrubby, upright for the most part, very few of them creeping; some are leafless, but most of them are leafy. Stems angular or tubercled, or more

more frequently cylindric or columnar; unarmed, or in the angular sorts resembling the upright Cactuses and armed with prickles, which are either solitary or in pairs, placed in a single row on the top of the ridges. Such as have leaves, have them simple, most frequently alternate and naked, in some sorts however they are opposite and are then commonly attended with stipules, and in a few they are placed by threes in whorls. Peduncles in the leafless sorts naked, bearing from one to three flowers; in the leafy ones axillary, but more frequently from two, to five or more in a terminating umbel; each sometimes in a many-flowered head, but more often dichotomous, trichotomous, or even tetrachotomous, with single flowers between the divisions; at the base and in the forkings having bractes in number the same with the peduncles, forming a sort of involucre.

Jussieu doubts whether each stamen being jointed, and accompanied with chaffs, and breaking forth at different times, may not (as in Box) be considered as so many one-stamened male flowers encircling one female flower in a common calyx or involucre. If so, the flowers of Euphorbia should be regarded as compound; and the plants as belonging to the class Monoecia^a.

The juice of every species of Spurge is so acrid, that it corrodes and ulcerates the body wherever it is applied; so that it is seldom used internally. Externally it is dropped on warts or corns to remove them; and in the hollow of a decayed tooth, to remove the pain by destroying the nerve, or it is rubbed behind the ears to give relief in the tooth-ach by blistering^b.

1. Stem triangular, compressed, succulent, rising to the height of eight or ten feet, and sending out many irregular spreading twisting branches, for the most part three-cornered, but having some two, and others four angles; at their extremities are a few short roundish leaves, which soon fall off; and near these come out now and then a few flowers, which have five thick whitish petals, with a large three-cornered germ in the centre; they soon drop off without producing seeds.

It grows naturally in the East Indies, whence the plants were brought to the gardens in Holland, and thence communicated to most of the curious gardens in Europe. [Mr. Miller cultivated it at Chelsea, in the year 1731^c.]

This has generally been taken for the true Euphorbium, and as such has been directed for medicinal use; but it is from the second sort that the drug now imported under that name in England is taken. Linneus supposes the seventh to be the sort which should be used; but as they are all nearly of the same quality, it may be indifferent from which this drug, which is the inspissated juice of the plant, is taken.

β. Has also a naked three-cornered compressed stalk, sending out a great number of erect branches, which are also generally three-cornered, but sometimes four-cornered; they are armed with short crooked spines, but have no leaves, nor have the plants produced flowers here. This also is a native of India.

2. In its native country, the Canary islands, this grows to the height of twenty feet or more, but in England it is rarely seen more than six or seven. The stem is very thick, green and succulent, and has four or five large angles, closely armed with black crooked spines, which come out by pairs at every indenture: it sends out from every side large succulent branches of the same form, which extend to the distance of two or three feet, and then turn their ends upwards, so that when the plants are well grown, they have some resemblance to a chandelier, they have no leaves, but are closely armed with black spines like the stem: at the ends of the branches come out the flowers, which are shaped like those of the first sort.

[According to Linneus, a sessile flower comes forth below each pair of prickles, on each side; with a shorter ovate concave green bracte. Calyx closed by five converging purple segments. Petals five placed on the outside of the calyx, dark purple sessile fleshy entire very obtuse^d.

The flowers appear in march and april. It was cultivated in 1697, by the Dukes of Beaufort^e.

3. Stem six feet high, with prickles in pairs and ascending branches. Leaves many, scattered, almost wedge-shaped, rounded at the tip, three inches long, quite entire, fleshy, smooth. Corolla none. Calyx fleshy, ventricose, red within, green without. Stamens short, about forty. Native of Cochinchina, where the leaves are eaten boiled with other herbs^f.]

4. Stem roundish, upright, succulent, about three feet high, putting out several branches on the side, of the same form; the angles are armed with long, single, black spines: at the ends of the branches come out small flowers, which are sometimes succeeded by small fruit.

[Native of the Cape of Good Hope. This was cultivated in 1731^g.]

5. Stems roundish, swelling out in the middle, and having knobbed angles, between which come out long straight spines; these stems are two feet high, and put a few branches from their side of the same form, at the ends of which flowers are produced, sitting close upon the angles; they are small and of a yellowish green colour.

[This differs from the preceding in having the angles doubled and swelling a little; and the spines single between the tubercles, which are placed longitudinally^h. Native of the Cape of Good Hope. It flowers in july and august, and was cultivated in 1759ⁱ.

6. This sort has stalks and branches very like those of the next, but much more slender; the spines of this are single, and those of the other double; and the ends of the branches in this are closely set with flowers on every angle.

[Native of the Cape of Good Hope. It flowers in june and july, and was cultivated in 1731^k.]

7. This puts out many stalks just above the surface, which are thick, succulent and roundish, having eight or ten angles whilst they are young, but as they grow old they lose their angles and become round; the branches grow distorted and irregular, first horizontal, but afterwards turning upwards; the angles are armed with small crooked spines; and on the upper part of the branches, in june and july, come out the flowers; they are small, and of a greenish white. It grows naturally in Africa.

[Gerarde calls this *the poisonous Gum Thistle*. He cultivated it in his garden; "his friend master William Martin, a right expert Chirurgion, having procured him the plants, by his servant that he sent to St. Crux in Barbary, as Chirurgion of a ship: he could not however keep them through the winter."

8. This is a shrub of a cubit high, spreading and branchy: branches about the thickness of a finger, sulcated longitudinally; in the interjacent channels are inserted three prickles; of which the exterior are very short and bent downwards; the middle one about an inch long, subulate, spreading, and curving downward. The flowers spring by threes from the bosoms of the prickles, and are sessile: the stamens six in number; two in each angle of the flower: the pistil does not arise from the side, as in many others. Native of Arabia^l.]

9. Stem upright, strong, five or six feet high, with irregular angles, and protuberances oblique to the angles; the lower part is naked, and the upper part branching, the branches are armed with crooked spines: at every protuberance and at the top are oblong leaves of a lucid green, very smooth, entire,

^a Jussieu gen.

^b Withering.

^c Hort. kew.

^d Mant.

^e Hort. kew.

^f Loureiro.

^g Hort. kew.

^h Linn. spec.

ⁱ Hort. kew.

^j Ibid.

^k Forsk.

and rounded at the end; these fall off in spring, and the plants remain naked for some months, and then (in June and July) the flowers come out; they sit close to the branches, and are of a greenish white colour; the leaves come out in the autumn.

[Loureiro adds, that the stem has four or five angles; that the branches are long, diffused; unjointed; the stem-leaves few, at the end scattered, thick, small; and the flowers solitary, scattered, subterminating. Native of the East Indies and Cochinchina. Much used for hedges, on account of its strong thorns. Cultivated in 1699, in the royal garden at Hampton Court.^m

10. *Trunk* fleshy, three inches in diameter, smooth: ridges eight, ten or more, broad at the base and keeled: keels flower-bearing, marked with scars of the peduncles and with glands alternately. *Peduncles* cylindric, the thickness of a pigeon's quill, jointed, with very short villose hairs scattered over them, usually first trichotomous, then dichotomous, seldom simple. *Bractes* at the divisions of the peduncles and at the base of each flower opposite, oblong, sharpish, pressed close, a line in length. *Calyx* bell-shaped, a little longer than the bractes, with a five-cleft border; the clefts ovate, obtuse, bent in, concave. *Petals* five, roundish-kidney-form, very blunt, twice the size of the clefts of the calyx, spreading, fleshy, convex, green, and pierced with a few small holes. *Filaments* twenty and upwards; a little longer than the calyx, subulate, villose. *Pistil* none.—It flowers from May to September.—Native of the Cape of Good Hope. Introduced by Fr. Masson, in 1774ⁿ.]

11. This has thick, roundish, succulent stalks, which are scaly; they send out many branches from their sides of the same form, which are twisted, and run one over another, so as to appear like a parcel of serpents, whence it has the appellation of Medusa's head: at the end of these are narrow, thick, succulent leaves, which drop off; and round the upper part of them the flowers come out: these are white, and of the same form with those of the other sorts, but larger; they are frequently succeeded by fruit.

β. Little Medusa's head has a thick short stalk, seldom more than eight or ten inches high, from which come out a great number of slender trailing branches, about a foot in length, intermixing and having the same appearance with the other, but smaller and much shorter: the ends are beset with narrow leaves, between which the white flowers come out.

[This species was cultivated in 1731, by Mr. Miller. It is a native of Africa^o.

12. Native of the Cape of Good Hope; a perfectly smooth species, abounding with a milky juice, which seems scarcely acrid: stem and branches erect and round; gradually thickening upwards till they arrive at the diameter of an inch: leaves sessile, spatule-shaped and elongated; very entire, and about four inches long; with a prominent back-rib: peduncles one-flowered, axillary, solitary; coated with lanceolate bractes: at the tops there are four or five larger bractes, forming a bell-shaped involucre, in which is contained a sessile flower with a pale yellow calyx, and bright-green petals; anthers twin on each filament: style long and upright^p.

Native of the Cape of Good Hope. Introduced by Fr. Masson in 1774. It flowers from January to August^q.]

13. This is one of the smaller shrubby species, and has a scaly and tuberosus branched stem; the petals are each three-toothed: the leaves are extremely small, and are chiefly produced toward the tops of the branches; they are but few in number, and resemble in some degree those of the *Herniaria hirsuta*: the flowers are large in proportion to the plant, and spring, to the number of three or four, from the top of some of the upper branches: the branches in this species are covered over with prominent tubercles or thick scales.

^m Morison.

ⁿ Hort. kew.

^o Ibid.

^p Jacquin.

^q Hort. kew.

Native of the Cape of Good Hope. Cultivated in 1731. It flowers in September and October^r.]

14. Stems many taper succulent, about four feet high; and requiring support; they have a light-green bark, and their lower parts are naked, but their upper parts have oblong smooth entire leaves, placed alternately on every side: flowers in small clusters at the ends of the branches, of a yellowish green colour, and sometimes succeeded by smooth round fruit, but the seeds rarely ripen in England. It grows naturally on the African shore in the Mediterranean; [and was cultivated in 1732, by James Sherard, M.D. at Eltham^s.

15. Native of Madeira and the Canary islands, whence it was sent by Masson, and introduced in 1777^t.

16. The whole of this plant is smooth. Stem erect, unarmed, jointed, purplish: branches dichotomous, covered with leaves at bottom. Leaves sessile, the length of the joints, sharpish, the lower ones erect, the upper ones spreading. Stipules roundish, minute, pale, ciliate. Flowers at the ends of the branchlets, axillary and at the divisions, solitary, small, peduncled. Peduncles shorter than the leaf. Calyx smooth, the throat whitish with close villose hairs. Petals five roundish. Capsule nearly the size of a Coriander seed, smooth and quite even. Native of the Caribbee islands.

17. Stem woody at the base, round and smooth at bottom, striated angular and subhirsute above: the two lower branches opposite, shorter than the stem, the upper ones alternate. Leaves petioled, very smooth, veinless; the two lowest opposite, oval, the rest alternate, linear, attenuated to both ends, an inch and half in length, the uppermost larger. Peduncles from the top of the stem and branches, in fives or thereabouts, umbelled. Calyx smooth, as is also the throat. Petals obovate, truncate, yellowish-green. Capsules smooth, quite even, the size of a small pea. Native of the island of Dominique; communicated by Monf. Thouin.

18. Stem unarmed: branches round, smooth, with an ash-coloured bark. Leaves petioled, several from the tubercles of the branches, unequal, smooth, veinless, quite entire. Peduncles at top, from the same bud with the leaves, round, smooth: flowers on lateral, horizontal pedicels, having a scale or two at the end. Calyx smooth. Petals obovate, truncate. Capsule villose: the pedicel scarcely beyond the calyx. Native of Arabia Felix^u.

19. Native of the Canary islands, whence it was introduced by Masson in 1779^v.]

20. Stem taper succulent, eighteen or twenty feet high, sending out many branches of the same form, subdividing into many smaller; they are jointed, but at a great distance, smooth, and of a deep-green colour, having a few small leaves at their extremities, which soon fall off. As the plants grow older, their stalks become stronger and less succulent, especially towards the bottom, where they turn to a brown colour, and become a little woody. The branches grow diffused and intermix with each other, forming a sort of bush towards the top. It does not produce flowers here. [Native of the East Indies. Cultivated in 1731, by Mr. Miller^w.

21. This is a wandlike suberect plant, six feet high, the whole of it abounding in a white bitterish milky juice. Stems numerous, round, smooth, weak, very pliant, branched, the thickness of a finger or of the thumb, the older ones ash-coloured, the younger green. Leaves some obtuse others acute, coriaceous, quite entire, petioled, deep green, two or three inches long, deciduous except on the branches, the middle dorsal nerve and the petiole augmented by a longitudinal lamella more or less waved and conspicuous, at first frequently tomentose on both sides, but with the upper surface very even, and the edges extremely waved; afterwards both sides always become flat and smooth.

^r Hort. kew.

^s Ibid.

^t Ibid.

^u Vahl.

^v Hort. kew.

^w Ibid.

Peduncles one-flowered, short, aggregate about the extremities of the branchlets, coming out principally when the plant is without leaves. Flowers void of scent, of a beautiful scarlet colour, and on account of their singular structure perhaps claiming a right to be of a distinct genus, though this species has most characters the same with the other Euphorbiiums. Calyx two-leaved, two-valved, falling off as the flower opens; the leaflets ovate, concave, acuminate, of the same colour with the corolla; which is one-petalled, irregular, four-parted, the upper segment subtriangular, emarginate, obtuse, incumbent, the two lateral ones oblong, obtuse, produced forwards, converging, double the length of the upper one, the fourth very small, oblong, obtuse, placed between the lateral parts below the upper one. Nectareous glands four, roundish, seated in the hollow of the corolla formed of the upper segment and the united part of the lateral ones, two of these are at the base of the upper segment, and the two others close the side of the former. Filaments about sixteen, awl-shaped, unequal. Germ ovate, hanging on the outside of the corolla by a very long pedicel; style awl-shaped, longer than the germ, permanent: stigmas three, reflex, half-two-cleft.

In South America, a strong decoction of this plant, especially of the stalks, is given in venereal cases, and in suppressions of the menses.—Native of the Caribbee islands and the neighbouring continent*.]

Mr. Miller makes two species of this under the names of *Tithymalus myrtifolius* and *laurocerasifolius* (myrtle-leaved and laurel-leaved Spurge). The first of these grows naturally near Carthage in America, whence Mr. Robert Millar, surgeon, sent the branches, which were planted here, and succeeded: this rises with shrubby succulent stalks to the height of twelve or fourteen feet, which are too weak to stand without support, though they are frequently as large as a man's little finger; but their leaves being succulent, are so heavy as to weigh down the branches if they are not supported. The leaves are oval, and terminate in acute points; they are two inches and a half long, and one inch and a half broad near their base; they are about the thickness of Bay leaves, and are ranged alternately on two sides of the branches, to which they fit close. The flowers are produced at the end of the branches three or four together; they are of a scarlet colour, of one petal in shape of a slipper.

β. The second grows naturally in Barbadoes, and most of the other islands in the West Indies, where the English inhabitants know it by the title of Poison Bush; this has thick, shrubby, succulent stalks, which will grow to the height of ten or twelve feet; these are larger than those of the first sort, and are garnished with oblong oval leaves ending with blunt points; they are above three inches long, and an inch and a half broad in the middle, of a very thick consistence, and of a dark green colour, ranged alternately on two sides of the stalk. The flowers grow at the end of the branches; they are shaped like those of the first sort, and are of a deep red colour.

This whole plant abounds with an acrid milky juice, which will draw blisters on the flesh wherever it is applied, and if it mixes with the blood, I have been credibly informed, it becomes a deadly poison; so that if the points of arrows, or the edges of swords are rubbed with this juice, it becomes fatal to any animal wounded with those weapons.

[It was cultivated in 1732, by Sir Charles Wager*.]

22. This is an annual plant, from two to three feet high. Some of the leaves are narrow and entire, others ovate; and divided in the middle almost to the midrib, in shape of a fiddle; they also vary in colour, some being inclinable to purple, others of a light green; their foot-stalks are short. The flowers are produced in small umbels at the ends of the

branches; they are of a greenish white, and are succeeded by small round capsules. It grows naturally at La Vera Cruz, whence Dr. Houstoun sent the seeds.

[Morison speaks with admiration of the heterogeneous leaves in this plant, a circumstance which is since found not to be uncommon particularly in the plants from the South seas. He speaks of this species of Spurge as attaining the height of a man, even in this country, with a trunk an inch in thickness and more, spreading out into straight, long, pliant branches; having some leaves three or four inches long, and narrow, resembling those of the narrow-leaved willows, others on the same branch soft, like those of an *Atriplex* or Orach, tending to a sea-green colour, sinuated, and from an inch to near two inches in breadth, others again very long and narrow. Varieties are observed in this plant, some having a reddish and somewhat wrinkled bark, whilst in others it is green and smooth, the leaves also being subject to vary much; as might be remarked in the royal garden at Hampton Court, where this Spurge was cultivated in 1690^b. This being shrubby, and so large a plant, cannot be the annual species of Miller described above. It belongs, as Retzius has observed, to the third section.]

23. Stem upright, six or seven feet high, covered with a light brown bark, and dividing at top into many branches. Leaves smooth, and of a beautiful green, but falling away in winter. Flowers from the ends of the branches, yellow and small, soon falling away without fruit. Native both of the islands and continent of South America. Mr. Miller received it from Tobago and Carthage, and the Dutch gardens have it from Curacoa. [It was introduced in 1690 by Mr. Bentick^c.]

24. This is an annual plant, rising with an upright stalk about a foot high, and dividing into a great number of branches, which spread very wide on every side. Leaves roundish-heart-shaped, on pretty long foot-stalks. The flowers come out singly from the divisions of the stalk; they are small, of an herbaceous colour, and are succeeded by small, round capsules. Native of South America: the seeds were sent to Mr. Miller from La Vera Cruz, by Dr. Houstoun.

[25. The whole of this is smooth. Stem unarmed: branches dichotomous at the end, three and four times divided. Leaves on short petioles, longer than the internodes, shorter and narrower on one side of the base, terminated by a minute dagger-point, even, veinless, glaucous-green. Peduncles at top from the forks of the branchlets, solitary. Flowers small. Capsule smooth, even, the size of a Coriander seed. Native of the East Indies^d.

26. This is so like Marjoram, that it cannot but be taken for it at first sight. It is a native of the island of Ascension^e, and the Friendly isles.

27. This also is a native of the Friendly isles^f.]

28. This is an annual plant, which rises with a branching stalk about two feet high, [herbaceous diffused, subdivided, round, coloured, smooth; branches alternate, spreading, pubescent. Leaves petioled, opposite, oblique at the base, ovate, obtuse, veined, glaucous underneath, sometimes purplish. Stipules simple, opposite, very short, blunt, between the petioles. Peduncles axillary, alternate, erect, dichotomous, commonly longer than the leaves, with the flowers crowded together. Calyx very minute. Petals four, convex, thick, green. Filaments two or three, longer than the corolla (not many breaking out at different times) with rudiments of others at the base. Anthers in pairs (like bifid filaments) yellow. Germ smooth. Capsule pedicelled. Native of most of the islands in the West Indies, a weed in cultivated grounds^g. Every part of it is poisonous to hogs^h. Cultivated in 1739 by Mr. Miller.

* Jacquin.

* Hort. kew.

^b Mor. hist.

^c Hort. kew.

^d Vahl.

^e Linn. spec.

^f Forster.

^g Swartz.

^h Sloane.

29. Native of Madeira, where it was found by Mr. Francis Maffon. Introduced in 1784. It flowers in april and may.

30. Stems herbaceous, a span in length, procumbent, round, branched, red. Leaves opposite, on very short petioles, bluntish, smooth, obscurely three-nerved, the upper surface green, the under glaucous. Flowers on short pedicels, often in threes, but sometimes solitary. Petals purple. Native of the West-Indies. Cultivated by Mr. Miller in 1758¹.

31. An annual; acrid and milky: flowering in gardens in the open air, and readily springing from seed: stems very numerous, spreading closely on the ground: leaves oblong, obtuse, and sometimes acute; obscurely denticulated on the superior part; smooth on the surface, but edged with hair on the back and margin; extremely numerous; and either green, red, or even deep purple; and sometimes spotted; thickly crowded on the tips of the branches in particular: flowers very small, on very short footstalks, from the bosoms of the leaves: calyx green; petals red, capsule hairy. Native of the island of Jamaica².

Cultivated before 1660, by Mr. Walker¹.

32. Stem herbaceous, subdivided, declined, from three inches to a foot in length, round. Leaves on very short petioles, opposite, small, oblique at the base, nerved, rough with hairs, paler underneath, spotted with red. Stipules in pairs, opposite, awl-shaped. Peduncles opposite, very short, much shorter than the leaves; flowers crowded together, pedicelled, minute. Calyx blood-red. Petals four, truncate, thick, blood-red. Filaments four, and not more, awl-shaped, from the bottom of the calyx, longer than the corolla. Anthers roundish, whitish, two-valved. Germ rough with hairs^m. Native of both Indies. Browne recommends it as a powerful resolute and deobstruent, provoking both sweat and urine very abundantly.

33. This is smaller and much more tender than the foregoing. Stem simple, round, covered with reddish-brown hairs, and half a foot in height. Leaves opposite, bluntly and scarcely serrate. Peduncles an inch long, coming out alternately from the axils, bear two heads of flowers together. These are both annual. Native of Indiaⁿ.

34. Native of the West-Indies. Introduced in 1787, by Mr. Alexander Anderson. It flowers in august and september. Annual^o.

Browne extolls a decoction of it as an active warm medicine, after a passage is procured in the dry belly-ache, by bathing in warm water, or on any occasion where resolute medicines are required.

35. Stem slender, somewhat hairy, breaking out near the ground into many very slender branches, half a foot long, alternate, subdividing into others. Leaves at the joints and divisions of the stem and branches, very small, sessile. The whole plant resembles Thyme. Native of India. Annual^p.

36. Stem upright, round, smooth, green. Leaves opposite, some entire, others slightly and obtusely serrate, smooth on both sides. Peduncle axillary, an inch long, alternate, sustaining a very few small flowers¹.—The leaves have frequently a brown spot. Calyxes purple. Petals white². Annual. Native of India.

37. Very nearly allied to *E. Chamæfyce*, but the whole every where villose-white. Leaves slightly emarginate and obscurely notched³.

Since this varies with stems almost smooth, and with leaves either slightly crenulate or entire, Cavanilles is of opinion that the next is not specifically different from it. According to him, the stems are a span high, red, covered with white hairs, with alternate branches. Leaves opposite, on very short petioles, lens-shaped, margined, narrower at the base in front, with a brown spot in the middle. Flowers

subsessile between the stem and the branch. Petals four, very short, callose at the base, with a white border obscurely three-notched. Filaments short, inserted into the receptacle, coming out at different times, usually two together: anthers ovate. The pedicel of the germ increases gradually: styles so short as to be hardly visible⁴.

Annual. Native of Spain, particularly in the province of La Mancha.

38. Stem depressed. Leaves opposite, emarginate, the base narrower in front. Flowers from the dichotomy. Calyx rufous. Petals white, crenate. Fruit smooth, annual^u.

Stems herbaceous, from two to four inches long, round, purplish. Branches dichotomous, short, those which bear flowers procumbent. Leaves petioled, opposite, small, veined, dotted, purplish-green, glaucous underneath. Flowers very minute, crowded, subsessile. Teeth of the calyx white-ciliated. Petals between these, blood-red. Filaments two or three (not more) very minute. Anthers black. Germ bent down: styles blood-red. Seeds roundish-angular, black^v.

South of Europe, especially in the kingdom of Valencia in Spain: also in Siberia, and Mesopotamia; and by way sides and barren fields in the West-Indies.

Cultivated in 1752, by Mr. Miller^v.

39. Root annual. Stems herbaceous, an inch and half high, very smooth, dark red, as is the whole plant. Leaves sessile, seldom green. Involucre three-leaved; leaflets orbiculate, mucronate, three times as large as the stem-leaves. Calyx turbinate, very small. Petals red, horned. Capsule smooth, ovate. Seeds whitish, with red grooves. Native of Spain, near Aranjuez, flowering in april and may^z.

40. This has the habit of *E. Chamæfyce*. Stems several, woody, filiform, diffused, dichotomously branched, purplish, scarcely hairy. Leaves on short petioles, only half the size of those in *E. Chamæfyce*, thickish, appearing hairy with a magnifier, narrower on one side of the base. Flowers peduncled, very minute: peduncles only half the length of the leaf. Capsule less than a mustard seed, somewhat hairy^a.

41. Root long, slender, fibrous. Stem forked immediately from the root: branches trailing, again forked of irregular lengths, frequently purple. Flowers on peduncles. Seeds smooth, tipped with purple^b.—According to Scopoli, stem round. Edges of the leaves purple. Petals red, roundish.

According to Vahl, stems a foot high, smooth, as is the whole plant; the internodes an inch and half long: branches alternate, dichotomous, frequently divaricate. Leaves opposite, petioled, thickish, veinless, narrower on one side, and shorter towards the base, broader on the other, widened at the base into an earlet, which is frequently toothletted. Capsules smooth.—Annual; flowering in july and august.

Native of the South of France, Spain, Carniola, England, on the sea-coast. Between Penzance and Marketjeu in Cornwall. Near Exmouth in Devonshire. It is called by Gerarde Ifope Spurge.

42. Annual. Native of Maryland and Virginia. It has the stature and appearance of *Chamæfyce*, but the leaves have a lobe at the base on one side. Stems procumbent, dichotomous and divaricating^c.

43. Stems herbaceous; upright but weak, entirely green, dichotomous, tender, from two to three feet high. Leaves acute, shining, an inch and half long, few, on petioles an inch in length. Peduncles terminating, upright, slender. Calyx bell-shaped, hirsute within. Petals two, roundish, quite entire, white. Capsules shining, smooth, small. Native of Carthage in New Spain, in wet grassy places^d.

¹ Hort. kew.

² Swartz.

³ Burm. zeyl.

⁴ Jacquin.

^u Burm. zeyl.

^v Ibid.

^w Linn. spec.

^x Hort. kew.

^y Hort. kew.

^z Linn. syst.

^a Cavanilles.

^b Hort. kew.

^c Woodw. Mss.

^d Linn. mant.

^e Cavanilles.

^f Linn. spec.

^g Swartz.

^h Vahl.

ⁱ Jacquin.

Swartz

Swartz has described a plant under the same name a native of Jamaica; but he doubts whether it be the graminea of Linneus. His description certainly does not agree with that of Jacquin given above.

44. Root creeping. Stems a span high, erect, dichotomous. Leaves opposite (only one or two of the lowest alternate), lanceolate, even, quite entire, the length of the internodes. Peduncles axillary, solitary, one-flowered, the length of the leaves whilst in flower, but twice as long when in fruit. Calyx thick. Native of Virginia and Canada.

45. Stem erect, a span or a foot high. Leaves oval, quite entire, smooth, the size of Purslain leaves or larger, (one or two of the lowest only alternate), obtuse, obsolete emarginate. Stem dichotomous, in the first division sometimes trifid and three-leaved. Peduncle long, as in the preceding. Native of Philadelphia^a.

46. Stem shrubby, from one to two feet high, very much branched, round, smooth: branches almost filiform, long, subdivided, thickened at the petioles, smooth, red. Leaves opposite, small, the lower ones orbiculate, the upper obovate, or oblong or roundish, smooth, glaucous underneath, flat, spreading; on very short red petioles. Flowers minute, axillary, especially towards the ends of the branches; on very short peduncles. Calyx four or five-toothed, hirsute within. Petals four, thick, roundish, depressed, yellow. Filaments two, very minute: anthers roundish, whitish, large. Germ bent down: styles reflex: stigmas simple, acute. Some of the flowers are barren, and have a cylindric germ, a single style, which is long and trifid at top. Native of Jamaica, on the cooler mountains^f.

47. This is a small shrub, a hand or little more in height, branched at the base: branches simple, round, covered with leaves, toothletted where the leaves fall, smooth, as is the whole plant. Leaves sessile, crowded, wedge-shaped, small, mucronate, toothletted at top, but at bottom quite entire. Umbel terminating, twice bifid. Involucres five-leaved, oblong, quite entire: involucels two-leaved. Petals quite entire. Stamens numerous: filaments whitish. Native of Portugal^g.

48. Root annual. Stem upright, nine inches high, round, smooth and branched; at bottom harder, more slender, and of a reddish colour, leafy and milky: branches few, not growing in any regular order, the lower ones longest. Leaves on the stem alternate. Involucres obovate. Involucels cordate, rounded and obtuse at the end. Petals (or nectaries) four, yellowish green, crescent-shaped. Stamens seldom more than two or three visible together, beyond the calyx. Capsule smooth (or scabrous at the edge^h), small, roundish-three-cornered, having two membranaceous, waving, very narrow crests or keels at the corners, perforated below the top, of a papery substance, two-valved. Receptacle columnar, central, slender, terminated by a depressed spongy head. Seeds ovate, on one side convex and scrobiculate, in rows, on the other angular, with a middle ridge, whitish-ash-coloured, with a conical fungose solid white umbilicus at topⁱ.—According to Linneus, all the flowers are hermaphrodite; but Retzius affirms that it is often polygamous, with one or two flowers on an upright pedicel, bearing petals, style and stigmas, but no germ or anthers.

Native of most parts of Europe, in kitchen gardens and other rich cultivated soil: flowering in July and August.

It may easily be distinguished from *E. helioscopia*, which has some resemblance to it, and is frequently found with it, by having the leaves entire about the edge, and the petals furnished with a horn at each end^k.

β. This variety has ovate-lanceolate, sharp leaves. The involucre is of the same form with the leaves; but the involucels are obliquely cordate^l.

In Savoy, about Montpellier, &c.

49. Very nearly allied to the next species. It differs from it, however, in having the leaves broader, of a lanceolate form, and blunter: the involucels manifestly cordate-sickle-shaped, mucronate: the divisions of the umbel more dichotomous: the stem less branched, and a little higher^m.

According to Villars, it is very low and much branched, the stem-leaves fall immediately, it retains only those of the divisions, which are repeated several times, spread out and bent back in such a manner, that the whole plant resembles a little bush; the elliptic petals have two very small threads, and sometimes only one; fruit smooth, and a little prolonged.

Native of the South of France, Switzerland, Germany, Austria, &c.

50. Root annual. Stem upright, branched, very leafy, about six inches high. Branches from the lower part of the stem. Leaves pressed to the stem, ending very sharp. Umbel trifid, quadrifid, seldom quinquifid, dichotomous. Involucres lanceolate-linear; involucels ovate-oblong, acuminate, opposite, often irregular. Calyx smooth. Petals or nectaries four, each furnished with two little horns. Stamens (from five to nine) generally about two visibleⁿ: the filaments swelling out into a globular form close under the anthers^o. Capsule smooth^p.

This small and delicate species is found in corn-fields in many parts of Europe: flowering from July to September.

β. Linneus affirms that this species is sharp-leaved on hills, retuse in meadows. Cavanilles on the contrary says that he has found the latter on sandy hills, and the former in corn-fields: and Krocker has observed them both in corn-fields. Cavanilles separates them, because in *E. retusa* the corolla is five-petalled, and the leaves emarginate at the end. This is found about Montpellier, in Spain and Silesia.

Professor John Martyn, in his edition of Tournefort's history of plants about Paris, says that there is a Spurge growing abundantly all over Cambridge-shire in the corn, differing from *Titymalus* *f. Esula exigua*, Bauh. pin. only in having the leaves blunt at the end; which he is persuaded is what Mr. Dent inserted in the appendix of the Cambridge catalogue, and Mr. Ray received into his synopsis and history under the name of *T. segetum longifolius*; perhaps (says he) it may be *T. f. Esula exigua foliis obtusis*. Bauh. pin. &c. See n. 72.

51. Stems hirsute. Leaves attenuated at the top. Native of Carthage in New Spain, on the sandy coast^q, also of Jamaica.

52. Root tuberous. Leaves nearly an inch and half in length, and almost half an inch in breadth, on petioles two or three inches long, springing from the root; they are blunt at the end, and sometimes emarginate. The stems are scarcely a hand and half in height, naked, dividing at top into two peduncles, each sustaining two flowers; there are two leaves at the division. Capsules large, hairy. Native of Africa^r.

53. Native country unknown: a smooth lactescent species: stem and branches shrubby, round; the older ones ash-coloured, the younger reddish-brown, marked by the cicatrices of the fallen leaves: the upper branches green: the branches are all progressively trichotomous; leaves very narrow and lanceolate, obtuse, entire, with very short foot-stalks, and very numerous; the terminating umbels are generally trifid, with dichotomous rays; the leaves forming the smaller umbels are roundish; petals four, sometimes five, dull yellow, roundish, flat, and obtuse; perianth hairy; anthers yellow-green: germ pale-green; capsule smooth^s.]

54. Stem upright, succulent, from three to four feet high, with oblong smooth sessile leaves; the upper part dichotomous, and an umbel comes out from each division; that in the first division being

^a Linn. amoen.

^b Curtis, Linn. succ. Retz.

^k Curtis.

^f Swartz.

^l Retz.

^g Vahl.

ⁱ Gaertn.

^m Krocker.

ⁿ Linn.

^o Curtis.

^p Jacquin.

^q Jacquin.

^r Withering.

^s Ray.

the largest, and those in the upper the smallest. The flowers are of a greenish yellow colour, appear in June and July, and the fruit follows soon after.

[All the involucre are cordate. There is one flower between the four rays of the umbel, which is male; the others are hermaphrodite. Filaments as far as thirty-six (Haller says thirty-eight,) but a third part of them usually abortive. Capsules smooth^e. What Linneus calls the petals, are in this species evidently hollow nectaries, containing juice, and putting forth a horn on each side^u. The parts in this species being large, it is the most proper for acquiring a just idea of this difficult genus.—It is a native of France and Italy, and has been long in the English gardens; being common there in the time of Gerarde.

55. Root annual. Stem herbaceous, more than half a foot in height, round. Leaves smooth, oblique, roughish about the edge. Involucre consisting of about four leaves, which are oblong-ovate, blunt, broader than the leaves, scarcely ferrate. Involucels ovate, truncate at the base. Petals yellowish, with two or three teeth. Capsules smooth. From the lower axils of the leaves proceed barren branches. In the form of the leaves it approaches near to *E. exigua retusa*, but in that they are only a line in breadth, whereas in this they are a finger broad^x. Native of Spain, and the South of France.

56. Root annual, of a slender fusiform figure. Stem round, upright, red at the base, half a foot high, so branched from the bottom, as to have the appearance of several stems: lower branches ascending: both they and the stem almost covered with imbricate leaves. Umbels four-cleft or five-cleft, with the rays several times dichotomous; the branches are sometimes divided into a similar umbel, and sometimes are very dichotomous: hence the plant when grown up becomes so spreading, and has such an abundance of branchlets and rays as to give it an appearance quite different from what it had when young. Leaves alternate, subsessile, wedge-shaped, truncate, with a small point in the middle, quite entire, flat, not three-toothed or retuse; in the adult plant they are sometimes only blunt, without any point on the stem and principal branches, and generally fall off. Leaflets of the involucre like the leaves, the same number as the rays: of the involucels opposite, sessile, quite entire, blunt with a point, oblong, one side at the base produced towards the side, the other obliterated; in the upper divisions broader, shorter, and often retuse, sometimes two or three-toothed. Flowers all fertile, solitary in the divisions, small, sessile. Calyx smooth, pale. Petals four, yellow, two broader. Germ smooth. Seeds brown, much wrinkled. The whole plant is smooth. It differs from *E. terracina* in having the leaves lanceolate, not oblique, nor in the least rugged about the edge. Near Vienna, flowering from July to September⁷.

57. This has a knobbed pear-shaped root, from which arise two or three stalks about a foot and half high. Leaves oblong, hairy, alternate, on every side the stalk. Flowers in small umbels from the divisions of the stalk, small, greenish-yellow, seldom producing seeds here.

[The barren stems have linear-lanceolate, blunt leaves; on the flowering stems they are roundish-ovate. Umbel quadrifid, then bifid, and no farther. Universal involucre four-leaved, the leaflets roundish, scarcely sharp. The first involucels are obcordate, the latter reniform, scarcely mucronate^z. Native of the island of Candia.—Cultivated in 1596, by Gerarde³.

58. The whole plant is smooth. Stem shrubby, round. Leaves scattered, sessile, an inch and half in length. The universal involucre resemble the leaves. Involucels of the first division oval-oblong, somewhat emarginate, half the length of the leaves;

those of the second division and the floral ones elliptic-roundish, emarginate. It flowers in June and July; and was cultivated by Mr. Miller in 1758^b.

59. An upright shrub, with branches alternate, strict, very simple, short, bearing flowers at the very tip. Leaves somewhat crowded, smooth, quite entire, smaller than the other species, not larger than in *E. exigua*. Umbels terminating, sessile. Involucre four-leaved; leaflets lanceolate, the length of the umbel. Involucels two-leaved, ovate-rhomboid. Umbellet bifid, and divided no farther. Petals in form of a crescent. Capsules smooth. Native of the Cape of Good Hope^c.

60. The branches, as they grow old, dry away and continue on the plant, so that it appears as if it had thorns. The flowers are usually solitary. Petals round. Capsules warted.—Morison distinguishes the *ragusinus* of Hermann from the *spinosus* of Bauhin; but they seem to be the same^d.—Native of the Levant. Cultivated in 1752, by Mr. Miller, edit. 6. n. 16^e.

61. This approaches to *E. dulcis*, but the leaves are more scabrous about the edge, and villose underneath. Capsules hispid, with subulate purplish bristles scattered over them. Native of Italy and Austria^f.

62. Root perennial. Stems several, smooth, firm, somewhat woody, green or reddish, either simple, or a little branched near the umbel, but without any universal involucre on the branches. Leaves very smooth and even, firm, thickish, alternate, spreading or horizontal, almost spatulate, blunt and slightly reflex at the end, so as to appear emarginate. Umbel mostly quinquefid, the rays twice dichotomous, the last division two-flowered, in the axil one flower, on the extreme branches two flowers, one yellow, with horned petals and naked, the other green, supported with two bractes, and abortive. Capsules smooth, not grooved, large. Universal involucre ovate, terminating in a prickle; involucels cordate, or rather semicircular. It abounds in milk.

Vahl remarks, that it is nearly allied to the next species, but differs from it in having the leaves, involucre and involucels quite entire. The stems are a foot high, ascending, round, warted. Leaves an inch long, narrowed a little towards the base, thickish, quite entire. Umbel terminating, and often one or two lateral ones. Involucre five-leaved, oblong, of the same structure with the leaves. Involucels firmer than common in the other species, mucronate. Rays of the primary umbel three or four inches long, twice bifid.

Native of the county of Nice^g. Found also by Vahl about Pampeluna.

63. Involucels very finely ferrate. Petals entire. Fruit red, muricate. It varies with villose leaves^h.

Root consisting of little scaly bulbs. Stem smooth, upright, simple, a foot high, red at bottom. Leaves scattered, sessile, an inch long, obtuse, quite entire, or very finely ferrate. Involucres five-leaved, but sometimes four, three, and even two-leaved. Involucels two-leaved, subovate or cordate, unequally toothletted, yellowish, to which colour the whole plant is inclined. Flowers sessile. Petals red, crescent-shaped, two-horned. Stamens two to five. Capsule villose, warted below the middle. The milk is mildⁱ.—Native of the South of Europe. Cultivated in 1759, by Mr. Miller^k.

64. The peculiarities of this species are, that the leaves are quite entire, spreading, sessile, acuminate, with the edges pellucid and red—that the leaves and rays of the umbel are very lax: that the colour is yellowish: that the flowers are all peduncled, and most of them barren, except those at the end: they have five rounded shining yellow petals: and the capsule is warted. The milk is mild. It flowers

^a Scopoli.

^y Jacquin.

^u Haller.

^z Linn. fyt.

^x Linn. spec.

³ Hort. kew.

^b Hort. kew.

^c Hort. kew.

^d Linn. fyt.

^e Linn. mant.

^f Linn. spec.

^g Allioni.

^h Linn. spec.

ⁱ Haller, Scop. Krock. Vahl.

^k Hort. kew.

after the end of april.—In shady meadows about Idria in Friuli¹.

65. Stems shrubby, simple, many, villose, a foot high. Leaves quite entire, acuminate, sessile. Umbels of four or five rays. The flowers from the first division of the rays fertile, peduncled; petals reddish brown, hemispherical. Capsules the size of a pea, echinated with soft, reddish prickles^m.—Native of the South of Europe. It flowers in june and july: and was introduced in 1785, by Mr. John Græferⁿ.

66. Stems rather shrubby, a hand's breadth or more high, smooth, cylindric, red, especially during the winter. Leaves alternate, subsessile, wedge-oblong, keeled, smooth, but not shining, red underneath at the base. Branchlets lateral, those from the lower axils barren, at length growing up so as to overshadow the stem. Umbels terminating, have three, four, five or six spreading rays. Involucre like the leaves, but shorter and broader. Involucels rhomb-heart-shaped. These and the leaves are terminated by a sharp point. Flowers subsessile, yellow; the first and second male, having very blunt petals, without horns; the rest hermaphrodite, with horned petals.—In the central flowers, the calyx has five sides, and five blunt corners, with five slight clefts, and the segments are more or less toothed at the end; the petals are hairy within; the filaments are eight or nine; and the germ is subsessile. In the lateral flowers, the segments of the calyx are four; the petals four; the stamens fourteen or more; the filaments surrounded at the top with a ring. In all, at the base of the flower, are several flat slender skinny woolly substances, cloven at the end. Fruit smooth, with the angles muricate^o.

First found by the Rev. Mr. Stonestreet in 1711, in the narrow neck of land which joins Portland to Devonshire. Since that near Exmouth in the same county. Abundantly on the shores of Cornwall: and near Caernarvon in Wales. It flowers from may to september. Marked as a shrub by Linneus; as perennial in the Kew catalogue; and as annual by Hudson and Withering. It abides two or three years in gardens.

67. Native of Austria: in stony places: stems five or six inches long, procumbent, and but very few in number: smaller or secondary branches more numerous; each terminated by a rose of leaves, while the older or lower leaves fall away in succession, so as to leave numerous scars: branch-leaves lanceolate; top and flower-leaves round-cordate; all sessile. Flowers smallish and yellow: the plant is glaucous, except the bractes or round leaves supporting the flowers^p.

68. Of a glaucous or sea-green colour. Root perennial. Stems upright, or ascending; numerous, generally red at bottom, thickly imbricated with smooth fleshy leaves, pointing upwards when wild, but open when cultivated, gradually increasing in size from the lower part of the stem upwards; the lower ones linear, linear-lanceolate, or oblong, sessile; the upper ones oval-lanceolate, half-stem-clasping. Involucre of five heart-shaped leaves. Petals entire. Capsules very large, smooth^a; but according to Dr. Withering, rough: all others say smooth.

On the sandy shores of Europe: with us on the coasts of Essex and Kent: between Southwold and Dunwich in Suffolk; Cornwall.

The juice of Sea Spurge is highly acrid; according to our Gerarde it is the most so of any species. He relates, that putting a single drop into his mouth, his throat inflamed so, that he hardly escaped with his life, by riding to the next farm-house, and drinking milk.

69. Perennial. Flowering in july. Native of the island of Porto Santo near Madeira. Found

there by Mr. Francis Maffon. Introduced in 1779¹.]

70. Root perennial, creeping, by which it multiplies very fast where it is once established. Stems a foot and half high. Lower leaves narrow, stiff and bristly, the upper ones shaped like those of narrow-leaved Myrtle. Flowers in large umbels from the divisions of the stem, yellow, appearing in june, but rarely producing seeds in this country. Native of Aleppo, and other parts of the Levant.

[71. There is no description of this, nor is it known where it is a native.

72. Root annual. Petals crescent-shaped. Fruit smooth, except that it is scabrous at the corners. Umbel often the length of the whole plant. Involucels almost semiorbiculate. There are flowering branches below the umbel^o.

According to Villars, it is from six to ten inches high; the lower stem-leaves fall very soon, and sometimes barren branches spring from the bottom of it; the umbel is divided into four parts, and each branch is subdivided into two, four or five times over; involucre triangular and blunt; petals ending in two short threads, less distant from each other than common; fruit three-cornered, smooth, except near the angles, where it is a little rugged.

Native of Barbary and Russia, of the South of France, Austria, Silesia, and the county of Nice.

Linneus, Gerard, &c. quote the *Tithymalus segetum longifolius* of Ray, as a synonym of this species. Mr. Hudson, following Dillenius, makes this a variety of the *platyphyllos*. I once thought that our Cambridgeshire plant was the *segetalis*; but we have no other besides the *exigua*. See n. 50.

73. Root annual. Stems eight or ten inches high, erect, smooth, round, red at bottom. Leaves scarcely petioled, hanging down a little, very smooth, paler underneath, blunt at the end with a point, but the first leaves sometimes emarginate. They are about two inches asunder, and from each axil proceeds a naked flowering branch. The terminating umbel has generally four rays, three or four inches in length, naked, and dividing again into pairs. Where these divide a single flower sits on a peduncle about an inch in length. Petals crescent-shaped.—It approaches to *Euph. segetalis*, but is much more branching, the branches coming out from the very lowest axils. The leaves are pale green, of a less firm substance. The leaves of the universal involucre are broader, and hang down. The whole plant has the branches and rays of the involucre divaricated. Whereas in *E. segetalis* the stems are firm and upright. The leaves narrower, somewhat glaucous, thicker, more crowded, and reflex, less deciduous. The umbel of five or six rays. In the manner of flowering and seeds they agree. The fruit in this is smooth, except at the angles.—Near Lufenzo, not far from Aost; and near Guillestre in Dauphiné: flowering from the beginning of april to the end of june^t.

74. Root annual. Stem upright, from six to nine inches high, round, slightly hairy, having opposite branches at bottom. Leaves alternate, or scattered, few, smooth, the lower petioled, the upper sessile. Umbel spreading, fastigate. Involucre of five leaves, like the other leaves. Involucels three, unequal, the inner only half the size of the others. All the flowers hermaphrodite. Calyx greenish yellow, with four or five yellow segments. Petals, or nectaries four, entire, roundish, or oval, yellowish green. Filaments fourteen; two, three or more visible at a time. Capsule smooth^a.

Native of most parts of Europe, in cultivated grounds. It flowers from july through the autumn. Called by the country people *Wart-wort*, *Churn-staff*, and *Cat's-milk*.

The juice is very acrimonious, and hence is often applied to warts for the purpose of destroying them. It should be used with caution, where the parts are

¹ Scopoli.

^m Ibid.

ⁿ Hort kew.

^o Linn. Wither. Stokes in Wither.

^p Jacquin.

^t Woodw. Mss. Linn.

^a Hort. kew.

^a Linn.

^t Allioni.

^a Linn. Curtis, Withering.

tender, particularly near the eyes, as it will inflame the face to a great degree^a. According to Linneus, if sheep eat it, they are purged by it, and their flesh acquires a bad taste; but this is not the case with cows.

75. Root annual. Involucels of the secondary and last umbel three-leaved; two leaflets broader on one side, oblique at the base, narrower on the other side, on the outside a little dilated towards the base; the third leaflet is ovate-roundish, with equal sides. Having the leaves and manner of growth the same as in *E. helioscopia*, at first sight it appears to be the same plant; but it differs in having the top of the stem, the leaves, peduncles and pedicels villose, and the capsules muricated with small tubercles. In cultivated grounds about Tunis^v.

76. This is a foot high, and is easily known by its oblong leaves, with frequent and sharp serratures^z. The leaves, however, vary very much, being sometimes cordate on the flowering-stems, and linear on the branches and barren stems, and sometimes linear on all. The umbels also are sometimes three-rayed and bifid, with the involucres and involucels cordate-attenuate^a.

Native of the South of Europe. Introduced in 1780, by Sign. Giovanni Fabroni^b.

77. Root biennial. Stems from eight inches to a foot in height, simple, cylindric, decumbent. Leaves ovate-lanceolate, half-stem-clasping, finely serrate, a little villose. Fertile branches axillary, dichotomous. Umbels small, yellow, spreading, extending above the stem. Involucre five-leaved, lanceolate, obscurely serrate. Involucels subovate, very entire. Flowers of the first, second and third rank abortive. Petals four, entire, yellow. Capsule very much warted^c.

Corn fields in the South of Europe and the Levant. With us in Essex; near Grandden lodge in Cambridgeshire; and near York: flowering in July.

78. This most splendid plant, by far the most beautiful of the genus, is the height of a man: the stem shrubby, rather fleshy, full of milky juice, round, abruptly branched: the branches curved upwards, three together; the smaller branches sometimes four or five together: bark smooth, whitish, marked with spots or scars where former leaves have grown. Leaves on the summits of the smaller branches, crowded together, almost sessile, spreading in every direction, bluntish, ending in a small point, smooth, opaque, dark green, glaucous underneath; the younger ones turned inwards, and those nearest the umbels coloured: principal nerve of all the leaves dull yellow, and in the younger ones near the umbels it is besides stained with red. Umbels terminating, erect, having five, six, or seven rays. Peduncles club-shaped, smooth, dichotomous. Involucels two or three together under each flower, of a most vivid scarlet. Flowers solitary, turbinate, yellowish, soon turning reddish. Calyx five-toothed. Petals five, divaricated, yellow, full of very sweet pellucid honey. Stamens fifteen or twenty, fertile, many abortive. Germ reflex. Styles reflex, red. Receptacle occupied by chaffy branched filaments. Capsule smooth.—Discovered in Jamaica, but sparingly, by Matthew Waller, Esq., who sent it to the late Marquis of Rockingham in 1778^d.—It flowers in January.

79. Stature erect. Universal umbel five-cleft, primary partial umbel three-cleft, the others dichotomous. Universal involucre five or six-leaved, leaflets oblong, obtuse; partial three-leaved, the rest two-leaved. The rays of the primary umbel have a leaflet and a smaller dichotomous branch in the middle. Stem-leaves lanceolate, very obtuse. Petals snow-white, spread out flat, in fives, not shaped like a pelta, but very slender^e.

Native of Virginia and Canada.

80. Stems quite simple, annual, round, rush-like, upright. Leaves broad-lanceolate, bluntish, sessile,

^a Curtis. ^y Vahl. ^z Villars. ^a Vahl.
^b Hort. kew. ^c Linn. ^d Smith.
^e Linn. spec.

alternate, quite entire, villose underneath, often rufescent at the edge. Universal umbel five-cleft, partial three-cleft, then dichotomous. Universal involucre five-leaved; partial three-leaved, then two-leaved; leaflets ovate-oblong; in the last ovate, all somewhat hairy. Petals four, entire. Capsules globular, scarcely grooved, covered with a thin, long, white wool^f.

Native of Sicily, Barbary and the Levant. Cultivated in 1739, by Mr. Miller^g.

81. It has entirely the air of *E. palustris* (n. 90), inasmuch that it might easily be taken for the same plant; it flowers also at the same time; it is, however, a little larger.—Root perennial. The leaves are broad-lanceolate, alternate, scarce apparently hairy on both sides; so finely serrate at the tip as hardly to be observed. The umbels are so confounded with the lateral umbellets, that the primary one is distinguished with difficulty: the petals and involucres are yellow. The primary flowers are male and five-petalled; the rest hermaphrodite and four-petalled; the petals are transversely oval. Capsules warted, with very fine white hairs scattered over them. There are barren branches from the lower axils of the leaves.

Native of Siberia^h.—It flowers from May to August. Cultivated in 1758, by Mr. Millerⁱ.]

82. Root perennial. Stems many, succulent, three feet high, covered with a purple bark. Leaves oblong, smooth, shaped like those of the Willow, dark green. The upper part of the stalks divide, and in the fork is situated an umbel of flowers of a greenish yellow colour; appearing in June: the seeds ripen in August. It was discovered in the Levant by Tournefort, who sent the seeds to the royal garden at Paris.

[Cultivated in 1739, by Mr. Miller^k.

83. Root annual. Stem upright, from a foot to two or three feet high, smooth. Leaves alternate, remote, smooth, finely serrate, with a very few villose hairs along the keel: the lower ones subpetioled, broader towards the end; the upper ones emarginate at the base, and above the base bent down at the sides. Involucre lanceolate. Involucels cordate. Both finely serrate. Petals entire, suborbiculate, yellow. Germs obscurely warted. A trifid umbellet grows from the axils of the leaves. The upper part of the plant is greenish yellow^l.—Native of England, France, Germany, Switzerland, Austria, Carniola, Piedmont; in corn-fields. With us it has been found at Black Notley in Essex, by Mr. Ray. Between Harefield common and Battle'swell, by Mr. Blackstone. Near Northfleet, by Mr. Hudson. At Ripton in Huntingdonshire, by Mr. Woodward. In the Isle of Wight by Dr. Stokes.

Dillenius supposed Ray's *Tithymalus segetum longifolius* to be the same with this; and Mr. Hudson has put it down as a variety. He observes that the leaves are very minutely serrate at the base only, in the variety. Mr. Woodward remarks that the leaves of the *platyphyllos* are nearly entire at the base. See n. 50, and 72.

84. Native of New Zealand^m.

85. Perennial. Stem a foot, eighteen inches, or two feet in height, upright, round, smooth, sea-green, much branched, leafy. Leaves broader than in *E. Cyparissias* (n. 75.), sea-green, smooth, linear-lanceolate, sessile, acuminate, quite entire. Umbel of eight or more rays, leaves of the involucre as many: the lateral umbels dichotomous. Involucels cordate. All the flowers fertile, according to Linneus; but Scopoli affirms that those on the first divisions are male. Petals four, yellowish, obscurely horned. Capsules smooth, somewhat warted on the prominent parts. The milk is very acridⁿ.

Native of France, Holland, Germany, Switzerland, Carniola, Savoy.

Cultivated here in 1570^o.

^f Linn. hort. upf. ^g Hort. kew. ^h Linn. spec.
ⁱ Hort. kew. ^k Ibid. ^l Linn. spec.
^m Forster. ⁿ Linn. Pollich, Scopoli.
^o Hort. kew. from Lobel.

86. Leaves quite entire, glaucous underneath, but not villose. The lateral umbels so crowded together at the top of the stalk, as hardly to be distinguished from the primary one. The rays half a foot long, angular, twice bifid. Involucels quite entire, two-leaved, of the same breadth and length. Flowers between the branches barren and deciduous; the rest fertile and peduncled. Petals four, red. Capsule without warts or hairs, but somewhat wrinkled on the back of each lobe^p. Native of Istria, Verona and Piedmont.

87. Perennial. Stems procumbent, a foot in length. Leaves entire, alternate, glaucous, smooth, attenuated at the base; the lower ones narrower, widening gradually. Peduncles from the upper axils simple, fertile. Involucre broad-lanceolate. Involucels triangular-cordate. Flowers sessile, in threes. Petals four, broad, blunt, truncated. Capsules smooth^q.—Native of Provence and Austria.

88. This bears a great resemblance to *E. Esula* (n. 85.), and in the spring the umbels are very much alike: this, however, differs in being larger; in having leaves not all alike, but the upper ones or those of the branches bristle-shaped or linear; the lower, or those of the stem lanceolate, the involucre consisting of about twenty leaves, which are reflex and broader; the involucels two-leaved, ovate-cordate, yellowish or reddish; the petals crescent-shaped, yellow. Capsules smooth. Others, however, affirm that they are warted. As the umbel withers, lateral branches with very narrow filiform leaves grow up, resembling the pine^r.

South of France, Germany, Austria, Carniola, Switzerland, Piedmont; on hills, by road sides, and in dry barren places.—It flowers with us from may to september. Parkinson informs us, that it was oftentimes found in the country gardens of poor folks in many places with us. They knew it by the name of *Welcome to our house*; whence we may presume that it was a favourite plant; probably it was then much in use as a purge; the Spurges were also then in request, not only for taking away warts, but for curing the leprosy and other cutaneous disorders.

89. Root perennial. Stems many, a foot long, trailing, with scars at bottom from the fallen leaves. These are alternate, succulent, concave, sea-green, sessile; the upper ones reflex. The umbel has from seven to nine rays. Involucre of as many ovate, sharp leaflets, more slender than the leaves. Involucels two-leaved, subcordate, broader, concave, sharp, somewhat scabrous about the edge. Flowers within the primary and secondary involucels male, the rest hermaphrodite. Calyxes ferrate about the edge. Petals four, yellow, horned with round tips, shining. Capsules smooth^s.

Native of the South of France, Spain, and Italy.—It flowers from april to june. Cultivated in 1570^t.

90. Root perennial. Stem three, four or five feet high, round, smooth, with branches towards the top, which are alternate, and shorter than the stem. Leaves alternate, sessile, blunt, smooth, glaucous underneath, sometimes quite entire, sometimes very finely ferrate. Involucres and involucels ovate; the former of five, six or seven leaves. The primary flowers male, five-petalled, abortive; the secondary hermaphrodite, four-petalled. Calyx very pale yellow. Petals entire, yellow, blunt, not horned. Capsules warted^u.—Native of Sweden, Denmark, Germany, Holland, Switzerland, France, Piedmont.—With us it flowers from may to august: and was cultivated so long since as 1570^x.]

91. Root perennial. Stems several, a foot or more in height, upright, unbranched, round, smooth, very light green, with red blotches here and there. Leaves frequent, alternate, resembling those of Spurge-Laurel, but less thick and stiff, above smooth and somewhat shining, from glaucous deep

green, underneath paler, and covered with a slender scarcely conspicuous woolliness, having hairs only along the nerve: these leaves are all of the same size except the bottom ones, which are smaller and rounder. The number of rays in the umbel is usually five; but sometimes on the middle and stronger stems another ray (or two) branches out, with a leaf or two under each, somewhat bigger than the rest. Of the two flowers on each ray, one only usually comes to maturity. The capsules are not properly wrinkled, but armed with many soft prickles on the middle; for at the corners they are smooth: they do not hang down, but stand upright on slender short peduncles. The flower has usually five petals, but sometimes only four.

Mr. Ray relates a case of a boy being killed by a dose of the juice of this plant^y.

Native of Ireland in the mountains of Munster, where it is known by the name of *Makinboy*. It was sent from thence by Stephens, Professor of Botany at Dublin, to the Eltham garden, where it flowered in 1729. It was first mentioned in *Phytologia Britannica*; next in the second edition of the catalogue of the Oxford garden; then by Merret in his Pinax, and by Ray in his first edition of his Catalogue of English plants^z.

It was found by Mr. Doody among the corn near Twickenham park, over against Richmond, and near Otterspool: but no person having met with it there afterwards, Doody is supposed to have mistaken another plant for it. Mr. Hudson, however, sets it down as being found between Faversham and Sittingbourn in Kent.—It flowers in may and june.]

92. This rises with an upright branching stem to the height of four feet. Leaves oblong, pointed, alternate. Flowers in umbels from the forks; they are small and yellow, and rarely produce seeds in England. Native of Italy, Sicily, Candia, &c.

93. [Root perennial. Stem herbaceous, not woody, slightly downy, purple, two or three feet high. The flowering part of it, during flowering, grows to more than twice its original length. Leaves alternate, remote, thin, not leathery and stiff, slightly downy, especially the root-leaves underneath: stem-leaves lanceolate, very entire, broader upwards, both blunt and pointed, tapering down into leaf-stalks: flower-leaves obovate-oblong, and obovate, with a short point at the end. Lateral flowering branches numerous, twice bifid, and forming a sort of long spike. Leaves of the involucre five, roundish, obovate. Involucels circular or elliptic, cloven half way down on each side, and rounded at each extremity, with a small point just perceptible to the naked eye. Petals crescent-shaped, yellow, in decay acquiring a purplish hue, and then sometimes mistaken for *E. Characias*^a. Vaillant will not have this separated from the next. Common in woods and hedges, in a clayey soil. It flowers in may, sometimes sooner, and continues to july.

94. Stems shrubby, proliferous, thick. Leaves hairy, perennial. Petals crescent-shaped, erose or gnawn, whereas those of the next species are entire^b. Haller joins these two; this differs, however, in having the involucels entire, submarginate, orbicular, perfoliate: the germ smooth: the stigmas semi-bifid, blackish: the anthers yellow, roundish: styles greenish yellow; stem unbranched, two feet high, reddish, naked below: leaves obtuse, not acuminate, subpctioled, red often mixed among the green, two or three inches long, and one broad; the younger ones very villose^c.—According to Scopoli, the leaves are very finely ferrate at the tip. The flowers between the rays and the branches male and sessile, with most of the stamens imperfect, and five petals. The other flowers fertile and four-petalled. Germ neither villose nor warted.

Native of woods, in the southern countries of Europe.

^p Scopoli.

^q Linn. spec.

^r Linn. succ. Pollich, Krock.

^s Gerard.

^t Hort. kew. from Lobel.

^u Hort. kew. from Lob.

^v Linn. Krock.

^y Hist. suppl. 666.

^z Linn. Woodw. Mss. Stokes in With.

^a Krock.

^b Dillenius.

^c Linn.

95. Stems several, shrubby, four feet high, (or even five or six in gardens) simple, thick, somewhat woolly, thickening upwards, reddish, with transverse scars from the fallen leaves. These are closely imbricate, lanceolate, leathery, somewhat downy, and bent back; green, with an elevated rib on each side, towards the flowers becoming broader and blunter. Umbel small, crowded, terminating, sessile; rays short, and numerous branches of the same length from the upper part of the stems. Leaves of the involucre eight, ten, or more, somewhat lanceolate, small, bent back. Involucels cloven half way down. Flowers small; those within the first involucels male, the rest perfect. Petals four, purple. Styles scarcely cloven, whereas in the *amygdaloides* they are deeply cloven. Germs villose. The whole plant is very downy^d.

Native of France, Spain, Italy and Germany, in woods and hedges. With us it is rare, if really found at all. At Paper-mill Pool Dam, in Heywood Park, Staffordshire, where Dr. Plot marks it to grow, Dr. Stokes, has searched for it in vain. It is said to have been found in Needwood forest. It flowers in June.]

96. This rises with a shrubby purple stem near three feet high. Leaves sessile, alternate. Umbels terminating, and forming a sort of spike. Involucres yellow. Petals black. The flowers appear in May, and the seeds ripen in July.

[97. Stem round, naked, jointed. Leaves narrow-linear, two inches long, ending in a small point. Petals entire. Capsules seem to be smooth.—Native of the island of S. Cruz, and communicated by Vahl^e.

98. Root almost simple, a span in length, going straight down, a little writhed. Stems diffused in a ring, roundish, jointed; joints knotty, dichotomous, slightly hairy. Leaves at the knots opposite, on short petioles, obovate, the upper ones oblanceolate, naked. Flowers heaped at the ends of the branches, males mixed with hermaphrodites, the petals of a beautiful rose-colour. Capsules smooth.—Native of the East-Indies, in driving sand. Communicated by König^f.]

PROPAGATION AND CULTURE.

I—25. The plants of the two first divisions of this vast genus are in general known by the name of *Euphorbium*. (The others were mostly known among authors, before Linneus, by the name of *Tithymalus*, or *Spurge*.) These plants are preserved in many curious gardens, more for the oddness of their structure, than any real beauty; but being so extremely different in their form, from almost any plants of European production, many curious persons have been induced to preserve the several sorts in their gardens.

They are all of them full of a milky acrid juice, which flows out on their being wounded in any part; this juice will blister the flesh, if it happen to lie upon any tender part for a short time, and will burn linen almost as bad as aqua fortis, therefore the plants should be handled with great caution; nor should the ends of their branches be ever bruised or injured; for if they are, it frequently occasions their rotting down to the next joint, and sometimes will destroy the whole plant, if those injured branches are not cut off in time; so that whenever the branches appear to have been injured, the sooner they are cut from the plants, the less danger there will be of their suffering from it; nor should any of the branches be cut between the joints, for the same reason.

Most of these plants were first brought to Europe by the Dutch, who have been very curious to introduce great numbers of plants from India, and also from the Cape of Good Hope: from the latter a very great variety of curious plants have been of late years brought to Europe, many of which produce very elegant flowers, and are the greatest ornaments

of the conservatory in the winter and spring seasons. These have been brought over in seeds, but the different sorts of *Euphorbia* came over most of them in plants or cuttings; for these may be easily transported to any distance, if either of them are put up in boxes, with any soft dry package, to prevent their being bruised, or their spines from wounding each other, and kept from moisture and cold; with this care they may be kept six months out of the ground, and if carefully planted will take root, and thrive as well as if they had been newly taken from the old plants, or out of the ground but a short time; which is a much more expeditious method of obtaining the plants than from seeds, when they can be procured.

The greatest part of these succulent plants grow naturally upon barren rocky places, or in dry sandy soils, where few other plants will thrive; therefore they should never be planted in rich or loamy earth here, nor suffered to receive much wet, which will cause them to rot. The best mixture of earth for these plants is about a fourth part of screened lime-rubbish, a fourth part of sea-sand, and half of light fresh earth from a common; these should be mixed well together, and frequently turned over before the mixture is used, that the parts may be incorporated, and the compost sweetened by being exposed to the air. If this mixture is prepared a year before it is wanted, it will be the better, that it may have the benefit of the winter's frost and the summer's heat to mellow it; and the oftener it is turned over, and the smaller the heaps are in which it is laid, the air will penetrate it better, and render it more fit for use.

These sorts are easily propagated by cuttings, which should be taken from the old plants in June; these must be cut at a joint, otherwise they will rot. When these cuttings are taken off, the milky juice of the old plants will flow out in plenty; therefore there should be some dry earth or sand applied upon the wounded part, which will harden and stop the sap; and the wounded part of the cuttings should also be rubbed in sand, or dry earth, for the same purpose; then the cuttings should be laid in a dry part of the stove for ten days or a fortnight; and some of those whose branches are large and very succulent, may lie three weeks or more before they are planted, that their wounds may be healed and hardened, otherwise they will rot. When the cuttings are planted, they should be each put into a small halfpenny pot, laying stones or rubbish in the bottom, and filling the pots with the mixture before directed; then plunge the pots into a moderate hot-bed, and if the weather is very hot, the glasses of the hot-bed should be shaded in the middle of the day, and the cuttings should be gently watered once or twice a week, according as the earth may dry: in about six weeks or two months the cuttings will have put out roots, so if the bed is not very warm, the plants may continue there, provided they have free air admitted to them every day, otherwise it will be better to remove them into the stove, where they may be hardened before the winter; for if they are too much drawn in summer, they are very apt to decay in winter, unless they are very carefully managed. During the summer season, these plants should be gently watered two or three times a week, according to the warmth of the season; but in winter they must not be watered oftener than once a week, and it should be given more sparingly at that season, especially if the stove is not warm: the first sort will require more warmth in the winter than any of the other, as also less water at that season. This, if well managed, will grow seven or eight feet high; but the plants must constantly remain in the stove, giving them a large share of air in warm weather, and in winter the stove should be kept in a temperate degree of warmth.

The fourth sort is at present the most rare in England; the plants which have been procured from Holland, have been most of them destroyed by placing them in stoves, where, by the heat, they

have

^d Linn. Stokes in With. Woodw. Mfs. Krock;

^e Retz.

^f Ibid.

have in one day turned black, and rotted immediately after. This sort will thrive well if placed in a dry airy glass case with Ficoides, and other succulent plants in the winter, where they may have free air in mild weather, and be protected from frost; in summer the plants may be exposed in the open air, in a warm situation, but should be screened from much wet: with this treatment, the plants will thrive much better than when they are more tenderly nursed.

The fifth, eleventh, fourteenth sorts, &c. are also pretty hardy, and will live in a good glass case in winter without fire, provided the frost is kept entirely out; in summer they may be placed abroad in a warm situation: as these are very succulent plants, they should not have too much wet; therefore, if the summer should prove very moist, it will be very proper to place these plants under some shelter, where they may enjoy the free air, and be screened from the rain, otherwise by receiving too much wet in summer they will rot in winter.

The eleventh sort will require to be supported, otherwise the weight of the branches will draw them upon the pots; and, by training the stems up to stakes, they will grow four or five feet high, and a great number of side branches will be produced.

The twenty-fourth and twenty-fifth, with several in the third division, (viz. 28, 30, 32, 33, 34, 35, 36, 46) are natives of the East or West-Indies; and being annual, the seeds must be sown upon a hot-bed in the spring, and when the plants are fit to remove, they should be planted separately in small pots filled with light earth, and plunged into the hot-bed again: they must afterwards be treated in the same manner as other tender annual plants from hot countries.

The fifty-fourth sort, which is vulgarly called the Caper bush, will become a weed in gardens where it is allowed to scatter its seeds, and when once introduced requires no care, but to keep the young plants clean from weeds: this is the case with most of the European sorts; several of which are notorious weeds in gardens and corn fields.

The annual sorts should have their seeds sown in the autumn; they will come up in the spring, and require no farther culture.

The perennial sorts may be propagated either by sowing the seeds, or parting the roots, or by cuttings.

57. may be increased by off-sets from the main root; these may be taken off in autumn, and planted in a shady situation, where they will thrive better than in the full sun.

58, 59, 78, 92, 95, May be propagated by cuttings during any of the summer months: they all require protection from frost in winter.—[78 must be kept in the hot-house, and being so eminently beautiful, it is to be lamented that it is yet confined to the most choice collections; which is the more remarkable, as it not only may be increased by cuttings, but also grows readily from seeds, both sent from Jamaica, and produced in England.]

The other perennials may be increased by parting the roots, or sowing the seeds in autumn. They are most of them hardy enough to endure the greatest cold of this country, especially if they be planted in a dry soil.

90, 91, should have a shady situation, and a moist soil.

93, 94, 95, being inhabitants of woods, must also have a shady situation. They will come up from scattered seeds, and may be increased by the roots.

70. should have the roots confined in pots, for when planted in the full ground, they creep to a great distance.

96. may be propagated by seeds, or from cuttings, and will live abroad, if planted in a dry rubbishy soil and warm situation, otherwise the plants are frequently killed by severe frost. The young plants raised from seeds are generally very fruitful; but the old ones, and those raised from cuttings, are barren.

[EUPHOREIA. See *Cynanchum*.

Euphorbia arbor. See *Cactus*.

EUPHORBIA. See *Euphorbia* & *Craffula*.

EUPHORIA. See *Scytalia*.]

EUPHRASIA. (From *ευφραινω*; the same with *ευφραινω*, *letitia*, joy, exbilaration, delight.)

Engl. Eye-bright. Fr. *Euphrase*.

[*Lin. gen. n.* 741. *Reich.* 799. *Schreb.* 998. *Tourn.* 78. *Juss.* 100. *Gærtn. t.* 54. *Odontitis* *Dill. gen.* 6.

Class. 14. 2. *Didynamia Angiospermia*.

Nat. order of *Personate*.—*Pediculares*. *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, cylindric, four-cleft, unequal, permanent.

COR. one-petalled, ringent. *Tube* length of the calyx. *Lip superior* concave, emarginate; *lip inferior* expanding, three-parted: *divisions* equal, obtuse.

STAM. *Filaments* four, filiform, inclined under the upper lip. *Anthers* two-lobed; of which the inferior are sharpened into a little spine on the lower lobe.

PIST. *Germ* ovate. *Style* filiform, of the situation and figure of the stamens. *Stigma* obtuse, entire.

PER. *Capsule* ovate-oblong, compressed, two-celled.

SEEDS numerous, very small, roundish.

ESSENTIAL CHARACTER.

Cal. four-cleft, cylindric. *Caps.* two-celled, ovate-oblong. *Lower anthers* have a little thorn at the base of one of the lobes.

SPECIES.

1. *Euphrasia latifolia*. *Broad-leaved Eye-bright*.

Lin. spec. 841. *synt.* 549. *Reich.* 3. 108. *Sabb.* *hort.* 3. t. 7. *Sauv. monsp.* 139. *Magn. monsp.* 95. t. 94. *Segu. veron.* 1. 270. (*Odontites*). *Allion. pedem.* n. 212.

E. purpurea minor. *Baub. prodr.* 111. *Raii bist.* 774.

E. pratensis Italica latifolia. *Baub. pin.* 234. *Mor. bist.* 3. 430. f. 11. t. 24. f. 8. *Raii bist.* 773.

E. tertia latifolia pratensis. *Column. ecpbr.* t. 200. f. 2.

E. purpurea latifolia. *Park.* 1329. 5.

Leaves tooth-palmate, flowers in a kind of head.

2. *Euphrasia officinalis*. *Common Eye-bright*.

Lin. spec. 841. *Reich.* 3. 108. *fl. lapp.* 247. *succ.* n. 543. *mat. med.* 155. *Gærtn. fruct.* 1. 257. *Huds. angl.* 269. *With.* 635. *Curt. lond.* 5. 50. *Lightf. scot.* 323. *Relb. cant.* n. 454. *Hall. belv.* n. 303. *Scop. carn.* n. 753. *Neck. gallob.* 263. *Pollich. pal.* n. 581. *Allion. pedem.* n. 213. *Krock. files.* n. 969. *Sabb. hort.* 3. t. 9. *Blackw. t.* 427. *D'Asso aragon.* n. 552. *Villars dauph.* 2. 409. *Woodv. med. bot.* 2. t. 220.

Euphrasia. *Camer. epit.* 767. *Tabern.* 362. *Lob. ic.* 1. 491. 1. *Dod.* 54. 3. *Fuchs.* 247. *Ger.* 537. 1. *emac.* 663. *Baub. bist.* 3. 432. 3. *Raii bist.* 771. *syn.* *284. *Riv. mon.* t. 90. f. 1.

E. officinarum. *Baub. pin.* 233. *Mor.* 11. 24. 1.

E. vulgaris. *Park. theat.* 1329. 1.

Leaves ovate, marked with lines, sharply toothed.

3. *Euphrasia tricuspida*.

Lin. spec. 841. *synt.* 550. *Reich.* 3. 109. *Allion. pedem.* n. 214. *Pluk. alm.* t. 177. f. 1. *Zanon. bist.* 110. t. 76.

Leaves linear, three-toothed.

4. *Euphrasia Odontites*. *Red Eye-bright*.

Lin. spec. 841. *Reich.* 3. 109. *hort. cliff.* 146. *fl. succ.* n. 544. *Gærtn. fruct.* 1. 258. *With.* 636. *Curt. lond.* 1. 44. *Lightf.* 324. *Relb.* n. 455. *Fl. rust.* t. 43. *Scop. carn.* n. 754. *Neck. gallob.* 264. *Pollich. pal.* n. 582. *Leers herb. born.* n. 476. *Krock. files.* n. 970. *Fl. dan.* t. 625. *Villars dauph.* 2. 411.

Bartsia Odontitis. *Huds. angl.* 268.

Odontites bracteis ferratis hirsutis. *Hall. belv.* n. 304.

Euphrasia pratensis rubra. *Baub. pin.* 234. *Mor.* 11. 24. 10. *Raii bist.* 772. *syn.* *284.—major. *Park.* 1329. 3.

E. altera.

- E. altera.* Dod. *pempt.* 55. Lob. *ic.* 1. 496. 2. Riv. *mon.* t. 90. f. 2.
E. parva purpurea. Bauh. *hist.* 3. 433.
Cratæogonon Euphrosine. Ger. 85. *emac.* 91. 3.
 β. *E. sylvestris major purpurea latifolia.* Column. *ecphr.* 1. 201. t. 202. f. 1.
Leaves linear, all serrate.
 5. *Euphrasia lutea.* Yellow Eye-bright.
Lin. spec. 842. Reich. 3. 109. Scop. *carn.* n. 755. Pollich *pal.* n. 583. Jacqu. *austr.* 4. t. 398. Allion. *pedem.* n. 216. Krock. *files.* n. 971. Villars *dauph.* 2. 411.
E. Coris. Crantz. *austr.* 298.
E. pratensis lutea. Bauh. *pin.* 234. Mor. 11. 24. 16. Raii *hist.* 773.—major. Park. *theat.* 1329. 6.
E. lutea montana angustifolia major altera. Column. *ecphr.* 1. 204. t. 203.
Odontites bracteis glabris integerrimis. Hall. *helv.* n. 305.
O. fl. luteo. Rivin. *mon.* t. 91.
Coris monspessulana lutea. Bauh. *hist.* 3. 433.
Leaves linear, serrate, the upper ones quite entire.
 6. *Euphrasia linifolia.* Flax-leaved Eye-bright.
Lin. spec. 842. *syft.* 550. Reich. 3. 110. Ger. *prov.* 285. 1. Sauv. *monsp.* 138. Villars *dauph.* 2. 411. Bauh. *pin.* 234. 2. Column. *ecphr.* 2. 68. t. 69.
Coris monspessulana lutea. Bauh. *hist.* 3. 433. *sec. Gerard.*
Leaves linear, all quite entire; calyxes smooth.
 7. *Euphrasia viscosa.* Clammy Eye-bright.
Lin. syft. 550. Reich. 3. 110. mant. 86. Ger. *prov.* 285. 2. Gouan. *illustr.* 37. Allion. *pedem.* n. 217. Villars *dauph.* 2. 411.
Odontites fol. viscidis, rariter ferratis. Hall. *helv.* n. 306.
Pedicularis annua lutea tenuifolia viscosa, pomum redolens. Garid. *aix.* 351. t. 78.
Leaves linear, calyxes glutinous-hispid.
 8. *Euphrasia cuneata.* Wedge-leaved Eye-bright.
Forst. fl. austr. n. 234.
Leaves somewhat wedge-shaped, gashed.
 9. *Euphrasia longiflora.* Long-flowered Eye-bright.
Cavan. hisp. 45. n. 68. t. 62. Vahl. *symb.* 3. 78. Lamarck *encycl.* 2. 398. Barrel. *ic.* 1204.
Pubescent-viscid, leaves linear, quite entire, tube of the corolla filiform three times as long as the calyx.
 DESCRIPTIONS, &c.

1. Root annual. Stem a hand's breadth high, or less, square, reddish, slightly hairy, simple, or dividing at bottom into two small branches, not more. Leaves few, thick, hairy, almost round, in pairs, very deeply notched, the lower ones having only about three, but the upper ones five or six notches. Flowers axillary, and in a spike at the end, coming out in pairs. Corolla purple (sometimes white^a.) Bractes palmate, subhirsute^b.

About Montpellier. Frequent in the hilly pastures of Italy, spreading a purple carpet in some places. In Montferrat, the county of Nice, and near Turin: Verona: on Monte Testaccio near Rome. In Apulia. In Castille, particularly near the Escorial.

2. Root annual. Stem from two to four inches high, or more, upright, round, hoary, purple, for the most part branched, in opposite pairs. Leaves opposite, sessile, obtuse, convex above, concave beneath, finely ciliate about the edge, slightly hirsute on each side, above somewhat glossy. Flowers from the axils of the leaves, on short peduncles, opposite, forming a spike or raceme at the tops of the branches and stem. Calyx angular, pubescent; segments lanceolate, acuminate, ciliate, nearly equal, dark purple at the ends, and with a few dark purple globular glands strewed on the outside. Corolla, tube rather crooked, a little hairy, white, stained with yellow at the mouth: border blueish white, with purple streaks; upper lip subovate, bifid, the segments ending in three teeth, pubescent, blunt, upright, white, with three purple lines on each side;

lower lip larger, all the segments emarginate, the middle segment largest, and having a yellow blotch, the lateral ones marked with three purple lines. Filaments purplish, not prominent beyond the upper lip: anthers purple, or brown, bearded underneath, or having a few white hairs on the lower part where they open. Germ bearded, or a little hairy at the top: style pubescent on the upper part: stigma fringed, with very minute glands round the edge. Capsule four-cornered at bottom, compressed above, slightly notched at the end, a little hairy towards the top, and marked with black dots. Seeds oblong or ovate^c, small, four or six in each cell, with a white edge, streaked longitudinally with white linear streaks; the interstices pale ferruginous^d.

Common on heaths and other dry pastures, especially on a chalky soil; flowering from July to September. It varies much in size, and in the colour of the corolla, which varies to quite white and yellow; it is more or less branching, and sometimes wholly unbranched.

It seems to have been unnoticed by the ancients. The Arabians mention it under the name of *Adbil*. Matthæus Sylvaticus, a physician of Mantua, who lived about the year 1320, recommended this plant in disorders of the eyes^e. It is still in use, particularly as an ingredient in British herb tobacco: and Mr. Lightfoot informs us, that the highlanders in Scotland make an infusion of it in milk, and anoint the patient's eyes with a feather dipped in it. It is, however, neglected by the faculty; and even thought by some to be injurious, at least in inflammations of the eyes. It is a weak astringent: but there seems to be no foundation for the old notion of its being useful in disorders of the eyes.

3. Leaves linear, with one tooth on each side. Corolla like the foregoing^f. Annual. Native of Italy.

4. Root annual. The whole plant commonly brownish red. Stem upright, stiff, very much branched, from six inches to a foot or more in height, hispid, obtusely four-cornered: branches opposite. Leaves opposite, sessile, linear-lanceolate, turning down, thinly toothed, slightly hispid, veins few, and hirsute underneath. Bractes lanceolate, nearly upright, purplish. Flowers in long, leafy spikes, pointing one way, nodding a little at top; in pairs or single, on short peduncles. Calyx hairy on the outside: the teeth equal and sharp. Corolla dusky red or purple (sometimes varying to white), hairy: very different in form from the foregoing, the upper lip being compressed, and scarcely emarginate, the three lobes of the lower lip shorter than the upper, equal, truncate, crenulate: all the lobes of the anthers are thorny at the tip, and bearded at the base; at the back where the filament is inserted, are several small club-shaped threads or appendages. Germ hairy, surrounded and sheathed at the base by a skinny membrane: style before the flower opens bent in under the upper lip, afterwards longer than the corolla, most hairy towards the bottom. Seeds ovate, very white, with a membranaceous margin on one side, elegantly latticed, with longitudinal ridges, and similar transverse streaks^g.

Common both in corn-fields and pastures; especially where it is moist: flowering from July to September.

According to Linneus, most cattle will eat it. With us it appears to be untouched in pastures. Whatever may be the case while it is young, certainly when it is in full vigour, cattle, so far from eating it, do not seem fond of the grass even at the distance of some inches from the plant.

5. This resembles the foregoing, but is different in having yellow flowers, the upper lip bearded or villose within and without, and emarginate; the lower lip concave, trifid; with the segments equal. The leaves narrower, scarcely linear, hispid, hanging

^a Curtis, Withering, Hudson, Lightfoot. ^d Gartner.
^c D'Affo. ^e Linn. *syft.*
^f Curtis, Withering, Leers, Gartner.

^a Bauh. *prodr.*

^b Linn.

down, the lower ones toothletted, the upper ones entire, like those of flax. Stem one, seldom more, rough, hard, woody, upright, wand-like, dusky red. Style yellow; stigma simple; both permanent. Anthers beardless. Capsule smooth and green at bottom; at top villose, blackish red. Seeds brown, oblong^h.

According to Gerard (prov. 286. 4.) it differs from the foregoing, in the stem being lower, less divaricate, and branched; the leaves broader, and more scabrous; the flowers yellow; appearing in summer.

Native of Switzerland, Savoy, Austria, Friuli, Silesia, the Palatinate, Piedmont, Tuscany, and the South of France.

6. This is a little stiff, narrower, finer, but frequently higher than the common sort. The leaves are entire. The flowers yellow¹. Native of France and Italy.

7. This differs from the fifth in having the leaves linear-lanceolate, not strictly linear; the calyxes villose and viscid, not smooth; the corollas shut, and not shorter than the stamens. It is also to be distinguished from *E. linifolia*^k.

The stem, according to Villars, is more firm and less branched; the leaves are a little wider than those of the preceding; the calyx is loaded with yellow, viscid, odoriferous glands; the flowers are yellow.

Gouan observes, that it is only three inches high and simple, or a foot high and branched, smooth or villose. All the leaves are broader at the base, thence gradually attenuated, and rough with hairs, most frequently quite entire, but sometimes toothed; the lower ones are opposite, the rest alternate, whence the branches themselves are seldom opposite. Flowers on a very short peduncle, alternate, each within a single bracte.

Native of Provence, Dauphine, Switzerland, Savoy, Piedmont, and the County of Nice.

8. Native of New Zealand¹.

9. Root annual. Stem upright, stiff, round, slender, a span high, simple, or having two or four opposite branches at top, shorter than the stem; towards the bottom it is leafless, and pubescent-viscid, as the whole plant is. Leaves sessile, opposite, an inch long, less and less towards the top of the plant, thickish, bluntish. Flowers at the top of the stem and branches, sessile, alternate, directed the same way, yellow, an inch long. Calycine segments linear, obtuse. Upper lip of the corolla oblong, erect; lower longer, flat, three-lobed. Filaments the length of the corolla; anthers villose, bifid, the segments divaricate, mucronate. Capsule half the length of the calyx, resembling that of the common sort. It is distinguished by the length of the corolla, with a filiform tube twice or three times as long as the calyx^m.

According to Cavanilles, the stem is a foot high, of a dark red colour; the branches decussated and four-cornered. Leaves longer than the internodes, as it were imbricate, fludded with very minute glutinous globules. Flowers axillary, in spikes. Calyx cut half way. Tube of the corolla half an inch long; lower lip broader, with rounded segments. Filaments short, fastened to the upper part of the tube, within the upper lip: anthers ovate, twin, two-awned at the base, and perforated. Style red, the length of the corolla: stigma club-shaped. Seeds longitudinally streaked.

Native of Spain. Found there by Barrelier; by Barnades in 1756; by Buens near Espexa, by Cavanilles near Rivas, and by Vahl in Arragon. It flowers there in september.

PROPAGATION AND CULTURE.

These are all annual plants, to be propagated only from seeds, sowed soon after they are ripe, or in the spring, in the borders of the garden. The second sort will not grow in a garden, unless it has

grafs or some other herbs to protect it. This and the fourth are common weeds. The other sorts are natives of the southern countries of Europe, and are not without difficulty preserved in gardens. The herb-women supply the markets plentifully with the second sorts from the pastures.

EUPHRASIA. See *Bartsia*, *Jussitia*, *Mimulus*, *Rhinanthus*, *Ruellia*, *Schwalbea*.

Euphrasie affinis. See *Jussitia* & *Torenia*.

EURYA. (From *eupus* *latus*, broad.)

Lin. gen. Schreb. n. 820. Thunb. jap. 11. nov. gen. 67. Juss. 432.

Class. 11. 1. Dodecandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth five-leaved; leaflets ovate, concave, obtuse, smooth; surrounded at the base with a two-leaved similar calycle, one-third only of the size of the calyx.

COR. Petals five, roundish-ovate, concave, the size of the calyx. Nectary, dots or a purple rim, at the base of the filaments.

STAM. Filaments thirteen, very short, so as to be scarcely any. Anthers upright, four-sided, almost the length of the corolla.

PIST. Germ superior, convex, smooth. Style subulate, shorter than the anthers. Stigmas three, reflex.

PER. Capsule globular, with the style permanent, sharp, smooth, five-celled, five-valved.

SEEDS somewhat three-cornered, dotted (very many, 10, 20. Kämpf.)

OBS. The flowers seem very frequently to be dioecous.

ESSENTIAL CHARACTER.

Cal. five-leaved, calycle. Cor. five-petalled. Stam. thirteen. Caps. five-celled.

SPECIES.

1. *Eurya japonica*.

Lin. syst. 444. Thunb. jap. 191. t. 25.

Fisakaki. Kämpf. amæn. 5. 778.

DESCRIPTION, &c.

All parts of the plant are smooth. Stem shrubby. Branches and twigs alternate, lax, from upright bent in, ash-coloured. Leaves on the twigs alternate, frequent, petioled, elliptic or oblong, drawn to a point at both ends, serrate, a little turned back at the edge, entire at the base, very smooth, thickish, ever-green, in two rows, upright, with an emarginate point, nerved, the upper surface green, but underneath yellowish, an inch or more in length. Petioles decurrent, semicylindric, grooved above, smooth, a line in length. Flowers axillary, in pairs, peduncled, drooping, seldom either single or in threes. Peduncles filiform, one-flowered, scarcely longer than the petioles. It flowers in september and october. Native of Japan^a.

EURYANDRA. (From *eupus* *wide*, and *avnp* *male*; the filaments or male organ of the plant being dilated, especially at the tip.)

Lin. gen. Schreb. n. 926. Forst. gen. t. 44. Juss. 280.

Class. 13. 3. Polyandria Trigynia.

Nat. order of *Coadunatae*.—*Magnoliae*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets roundish, concave; the two outer smaller.

COR. Petals three, roundish, concave, longer than the calyx.

STAM. Filaments very many, capillary, very much dilated at the tip. Anthers twin, with the cells disjoined.

PIST. Germs three, ovate. Styles three, very short. Stigmas two, slightly divided.

PER. Follicles three, ovate, divaricate, opening longitudinally on the inner side.

SEEDS some.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. three-petalled. Filam. much dilated at the tip, with twin disjoined anthers. Follicles three.

^a Thunberg.

^h Krockér.

¹ Villars.

^k Linn. mant.

¹ Forster.

^a Vahl.

1. *Euryandra scandens*.*Forst. gen.* 82.

It is a climbing plant; a native of New Caledonia*.

EXACUM, (of *Pliny*, Εξάκον of *Dioscorides*. Derivation unknown.)*Lin. gen. n.* 141. *Reich.* 147. *Schreb.* 185.*Juss.* 142. *Gertn. t.* 114.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Rotaceæ*.—*Gentianæ* *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* four-leaved: leaflets ovate, obtuse, from erect-spreading, permanent.

COR. one-petalled, permanent: tube globose, length of the calyx: border four-parted: divisions roundish, spreading.

STAM. Filaments four, filiform, fitting on the tube; length of the border. Anthers roundish.

PIST. Germ roundish, filling the tube. Style filiform, upright, length of the border. Stigma headed.

PER. Capsule roundish, compressed, two-furrowed, two-celled, length of the calyx.

SEEDS numerous, receptacle filling up the capsule.

ESSENTIAL CHARACTER.

Cal. four-leaved. Cor. salver-shaped, with an inflated tube. Caps. two-furrowed, two-celled, many-seeded, bursting at the top.

SPECIES.

1. *Exacum albens*.*Lin. syst.* 155. *suppl.* 123. *Burm. afr.* 207. t. 74. f. 4. (Centaurium).

Leaves subdecurrent, stamens protruded.

2. *Exacum pedunculatum*.*Lin. spec.* 163. *Reich.* 1. 318. *Vahl symb.* 3. 15. *Pluk. mant.* t. 343. f. 3. (Centaurium).

Flowers four-cleft terminating, calycine leaflets ovate, leaves lanceolate three-nerved undotted.

3. *Exacum aureum*.*Lin. syst.* 155. *suppl.* 123. *Pluk. phyt.* t. 275. f. 3. (Centaurium).

Leaves sessile, stamens protruded.

4. *Exacum sessile*.*Lin. spec.* 163. *Reich.* 1. 318. *fl. zeyl.* n. 61. *amoen.* 1. 391.

Flowers four-cleft lateral and terminating, capsules nodding, leaves heart-shaped.

5. *Exacum cordatum*.*Lin. syst.* 155. *suppl.* 124.*E. grandiflorum.* *Gertn. fruct.* 2. 158?

Flowers five-cleft, calycine leaflets heart-shaped, striated.

6. *Exacum guianense*.*Vahl symb.* 3. 16. *Aubl. guian.* 68. t. 26. f. 1.

Corollas four-cleft, calyxes membranaceous-keeled even, leaves lanceolate.

7. *Exacum spicatum*.*Vahl symb.* 3. 17. *Aubl. guian.* 72. t. 27. (Coutubea).

Flowers spiked in whorls of threes, leaves lanceolate, stem simple.

8. *Exacum ramosum*.*Vahl symb.* 3. 17.*Coutubea ramosa.* *Aubl. guian.* 74. t. 28.

Flowers subspiked opposite, leaves lanceolate, stem branched.

9. *Exacum punctatum*.*Lin. syst.* 155. *suppl.* 124.

Leaves on very short petioles oblong three-nerved dotted, stamens protruded.

10. *Exacum viscosum*.*Smith ic. rar.* 18.*Gentiana viscosa.* *Ait. hort. kew.* 1. 321.

Leaves oblong nerved embracing, flowers five-cleft, bractes heart-shaped, perfoliate, longer than the calyx.

DESCRIPTIONS, &c.

This genus differs from *Gentiana*, according to the observation of *Vahl*, in little else besides the number of stamens: *Dr. Smith* however remarks,* *Forster.*

that it differs from *Gentiana* in not having a cloven style; from *Swertia* in the want of honey-bearing pores; from *Chlora* in not having a four-cleft stigma, as well as in the number of the parts being widely different; from *Lisianthus* in not having its stigma formed of two flat plates; and from *Chironia* in its straight, not spirally twisted anthers. Probably many plants referred by *Linneus* to the last genus may belong to this.—The essential characters of the genus *Exacum* are, 1. a salver-shaped corolla; 2. a simple style, with a capitate stigma, slightly cloven; 3. straight anthers, bursting longitudinally on their inside^a.

Although these plants are removed from the fifth class to the fourth, yet some of the species have five parts in the fructification.

The flowers are axillary, or dichotomously corymbed and terminating, one-flowered in the divisions^b.

1. Root annual. Stem a hand's breadth high, dichotomous, herbaceous, four-sided, smooth, fastigiate. Leaves heart-shaped, somewhat stem-clasping, oleraceous, smooth, decurrent at the edge. Corolla salver-shaped, white; tube cylindric, longer than the calyx; border the length of the tube. Filaments very short. Anthers oblong. Stigmas two, thickish. Capsule superior, cylindric. It has the appearance of *Gentiana Centaurium*.

Native of the Cape of Good Hope; where it was observed by *Sparrmann*^c.

2. Root annual. Stem upright, a palm in height, four-cornered with acute angles, branched, very smooth, as is the whole plant: branches few, simple, opposite, shorter than the stem. Leaves opposite, sessile, an inch long, sharp at both ends, quite entire, even. Peduncles from the top of the stem and branches, solitary, one-flowered, short. Calyx four-parted, four-cornered; the parts ovate, acuminate, membranaceous at the edge. Corolla subcampanulate, violet-coloured, larger than in the other sorts, permanent: tube the length of the calyx: segments of the border lanceolate, obtuse. Anthers linear, a little shorter than the border. Style the length of the corolla: stigma thickened. Capsule globular, even, the size of black Pepper.—It has the habit of *Chironia trinervia*; but differs in size, in having a four-cleft corolla, and four stamens. It differs widely from *E. albens*, with which the younger *Linneus* has joined it, in his supplement^d.

Native of the East Indies.

3. Root annual. Stem a hand's breadth high, dichotomous, slightly four-cornered, smooth, brachiate. Leaves opposite, heart-shaped, the upper and lower lanceolate. Peduncles from the divisions, one-flowered, the length of the flower. Calyx five-leaved. Corolla yellow, salver-shaped, four-cleft; segments lanceolate, sharp. Filaments bristle-form; anthers oblong. Germ ovate: style the length of the stamens; stigma thickish. Capsule cylindric, obtuse, half-two-celled, bivalve. It has the appearance of *Gentiana Centaurium*.

Native of the Cape of Good Hope^e.

4. Stem erect, a span high, four-cornered, even, simple, dichotomous at top. Leaves opposite, ovate, sessile, quite entire. Flowers from the divisions of the stem, solitary, sessile, larger than the leaves.

Native of the East Indies^f.

5. Plant like *Chironia trinervia*, but the flower blue. Root annual. Stem herbaceous, dichotomous, a short span in height. Leaves sessile, cordate, veinless, smooth, sharp. Flowers axillary at the forks, on one-flowered, short peduncles. Calyx five-leaved, five-cornered: leaflets half-cordate, membranaceous with a boat-shaped keel, oblique, streaked. Corolla yellow, salver-shaped: tube cylindric, longer than the calyx; border five-parted, obovate. Filaments short, in the throat of the corolla: anthers oblong. Style the length of the stamens: stigma

^a *Smith ic. rar.*^b *Vahl.*^c *Jussieu gen.*^d *Lin. suppl.*^e *Lin. suppl.*^f *Lin. zeyl.*

thickish, oblong, cloven. *Capsule* oblong.—This has also the appearance of *Gentiana Centaurium*.

Native of the Cape^g.

6. The plant is often scarcely a finger's height, with a stem either quite simple or very little branched, and quite smooth, upright and sharply four-cornered. Leaves opposite, attenuated, the lower ones shorter and sharp. Peduncles terminating or from the upper axils, solitary, one-flowered, very short, angular. Calyx resembling that of *Gentiana exacoides*, four-leaved, four-cornered, with the angles prominent and membranaceous: leaflets ovate, much attenuated, without oblique streaks such as those in *E. fessile*.

Native of Cayenne.

7. Stem herbaceous, two feet high, erect, quite simple except that sometimes there are two flowering branches from the last axils, obscurely four-cornered, without decurrent lines, smooth as is also the whole plant, very smooth. Leaves opposite, sessile, remote, two inches and more in length, very even, simply and obscurely veined, attenuated, quite entire. Spike terminating, erect, pyramidal, almost a span long, with abundance of flowers. Bracteawl-shaped, very narrow, at the base of each calyx; which is tubular, deeply four-cleft; the clefts lanceolate, much attenuated, the same length with the tube of the corolla. Corolla twice the length of the calyx, with a cylindrical tube: border before it is unfolded four-cornered, attenuated, rolled up spirally at the top; divisions lanceolate, the length of the tube. Filaments fixed to the middle of the tube, the length of the corolla, dilated at the base, with the margins subconverging at top. Anthers sagittate. Germ superior, oblong, acute. Style the length of the stamens. Stigma bilamellate. Capsule oblong, one-celled, two-valved. The flowers have the very same habit with the other species, nor do they seem to have any character different from this genus, (except in having the stigma formed of two flat plates, as in *Lisianthus*.) The lower part of the stamens is falsely represented as distinct from the filaments in Aublet's figure. There is no nectary, except we regard the arch formed by the upper converging margins of the filament as such.

Native of Cayenne.

8. The whole plant is smooth. Stem erect, slightly four-cornered by four very slender decurrent lines: branches opposite, simple. Leaves sessile, opposite, an inch long and more, narrower and shorter than in the preceding, attenuated to both ends, quite entire, obscurely veined underneath: the floral leaves narrower, the lower ones longer than the calyx, gradually decreasing towards the top of the plant, the uppermost small scarcely equal to the pedicel. Flowers distant, on very short pedicels, with two bristle-shaped, appressed bractes at the base of the calyx; which is one-leaved, oblong, four-cleft; the clefts lanceolate, attenuated, membranaceous at the edge. Segments of the corolla ovate, acute.

Native of Guiana^h.

9. This is larger than the other species. Leaves as in *Hypericum*, glandular, dotted. Corolla blueish, Stamens yellow.

Native of the East Indies, where it was observed by Königⁱ.

10. Root perennial. Stem somewhat shrubby, erect, roundish: branches opposite, erect, slightly quadrangular, green, leafy, many-flowered. Leaves opposite, acute, entire, with three or five nerves, reticulated with veins, green on both sides, smooth, dilated into a heart-like shape at the base. Panicles terminating; erect, subdivided in a three-fold order, much branched, many-flowered. Pedicels roundish, slender, single-flowered. Bractes two at each division of the panicle as well as under each flower, formed like the leaves, but smaller, nerved, permanent. Flowers of an elegant golden colour, inodorous, slightly drooping, the size of those of *Chlora perfoliata*. Calyx one-third the length of the

bractes, bell-shaped, deeply five-cleft, viscid; segments erect, blunt, somewhat membranous at the edge, smooth. Tube of the corolla twice as long as the calyx, transparent, highly viscid, swelling at the base, and becoming ovate where it is filled by the increasing germ, contracted at the orifice; segments spreading, the length of the tube, obovate, obtuse, paler beneath. Stamens five, projecting, half as long as the border: filaments inserted into the orifice of the tube, leaning towards the upper side of the flower, equal, whitish, slightly incurved at the tip. Anthers oblong, incumbent, cloven at the base, bursting by two longitudinal openings on the inside, permanent, never becoming spirally twisted, pale yellow. Germ oval, with two furrows, green, smooth, half as long as the tube. Style scarcely so long as the stamens, declining, round, whitish, curved upwards at the end. Stigma capitated, slightly cloven^k.

Found by Mr. Francis Masson in the Canary islands, and introduced in 1781^l.

PROPAGATION AND CULTURE.

See GENTIANA.

EXACUM FILIFORME. See *Gentiana filiformis*.

EXCOECARIA. (From *Excoeco*, to deprive of sight.)

Lin. gen. n. 1102. Reich. 1205. Schreb. 1498.

Rumph. Juss. 390. Gærtn. t. 108.

Class. 22. 3. Dioecia Triandria.

Nat. order of *Tricoccae*. *Euphorbiae* Juss.

GENERIC CHARACTER.

* Male.

CAL. Ament cylindric, covered with floscules.

COR. none.

STAM. Filaments three, filiform. Anthers roundish.

* Female.

CAL. Ament as in the male.

COR. none.

PIST. Germ roundish, slightly three-sided. Styles three. Stigmas simple.

PER. Berry (Capsule) tricoccous, smooth, divisions marked out by a furrow.

SEEDS solitary smooth.

ESSENTIAL CHARACTER.

Ament naked. Cal. and Cor. none. Styles three.

Caps. tricoccous.

SPECIES.

1. *Excoecaria Agallocha*.

Lin. spec. 1451. syst. 882. Reich. 4. 238. Gærtn. fruct. 2. 126.

Arbor excoecans. Rumph. amb. 2. 237. t. 79, 80.

2. *Excoecaria cochinchinensis*.

Lour. cochinch. 612.

Leaves two-coloured shining, scales of the ament many-flowered.

DESCRIPTIONS, &c.

1. Capsule small, the size of a Juniper berry, subglobular, three-grooved, smooth, black, three-celled, of a papery substance, not divided within into three distinct grains, but merely opening, when pressed, by three valves. Seeds one in each cell, subglobular, acuminate at top, convex on one side, very bluntly angular on the other. Rumphius describes the capsules of the size of the Caper, rufescent when ripe, and bursting elastically; the seeds hard, and variegated like those of *Ricinus*^m.

Native of Amboina and Tongatabu.

2. This is an arboreous shrub, eight feet high; with the stem and branches irregular, spreading, reclining. Leaves lanceolate, slightly serrate, petioled, some opposite others scattered, the upper surface dark-green, the lower very red, both shining. Scales of the ament imbricate, subterminating. The female flowers have three, long, awl-shaped, reflex stigmas. Capsule three-lobed, somewhat fleshy, red, small, three-celled, three-valved. Seeds ovate, smooth and even.

It possesses an astringent agglutinating quality. The whole plant abounds in a glutinous milky juice, which has not the reputation of destroying

^g Linn. suppl.

^h Vahl.

ⁱ Linn. suppl.

^k Smith.

^l Hort. kew.

^m Gærtnev.

the fight, nor is the Agallochum, even of a bastard fort found in it.

Native both of China and CochinChina, where it is cultivated for the beauty of its red leaves^a.

EXOACANTHA. (From *ἐξανανθουμαι*, *spinis horreo*. *Οξανανθα* or *Οξανανθος* is the name of a tree in *Dioscorides*.)

Billardiere ic. *fyr.* 1. 10. t. 2.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Umbellatæ* or *Umbelliferae*.

GENERIC CHARACTER.

CAL. Umbel universal manifold, spreading, the inner rays gradually smaller, the inmost very short. Partial manifold.

Involucre universal with rays usually twelve, channelled, spiny at the end. Partial halved, with the middle ray very long, similar to the rays of the involucre.

Perianth proper scarcely observable.

COR. universal uniform.

Proper five-petalled. Petals inflex-heart-shaped, equal.

STAM. Filaments five, capillary, longer than the corolla. Anthers roundish.

PIST. Germ inferior, ovate. Styles two, shorter, straight. Stigmas two, simple.

PER. Fruit subovate, striated, bipartile.

SEEDS two, ovate, convex and striated on one side, flat on the other.

OBS. Allied to *Echinophora*, but with uncalyced flowers, all hermaphrodite, equal petals, and naked seeds.

ESSENTIAL CHARACTER.

Invol. spiny. Involucels halved with unequal rays. Flowers all hermaphrodite, with equal inflex-heart-shaped petals. Seeds ovate, striated.

SPECIES.

1. *Exoacantha heterophylla*.

Billard. *fyr.* 10. t. 2.

Leaves pinnate, root-leaflets ovate toothed gashed, stem-leaves lanceolate acute.

DESCRIPTION, &c.

Root simple, thickish, biennial. Stem two feet high or more, striated, subflexuose, smooth. Leaves smooth. Stem-leaves usually entire, with the middle leaflet very long. The two umbels have about forty rays; those of the umbellule nearly equal. Leaflets of the involucre from nine to eleven, unequal: the central ones with short bristle-shaped rays: the circumference with three middle rays, sometimes five, channelled, spiny at the tip. Petals white. Anthers yellowish. Fruit ten-streaked.

Found by *Billardiere* near Nazareth^o.

EYEBRIGHT. See *Euphrasia*.

* * The following articles, having by an oversight been omitted in their proper place, are inserted here.

ERODIUM. (*Ερωδιος*, is the name of the Crane in *Aristotle*, whence this genus is so called on account of the long beak to the fruit.)

L'Herit. geran. Ait. hort. kew. 2. 414.

Gerania myrrhina. Linn. Gertn. t. 79.

Class. 16. 2. Monadelphia Pentandria.

Nat. order of *Gruinales*. *Gerania* *Juff.*

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets ovate, acute, concave, permanent.

COR. Petals five, obcordate or ovate, spreading, large. Neetary, five scales alternate with the filaments; and melliferous glands placed at the base of the filaments.

STAM. Filaments five, awl-shaped, connected at the base with the scales into the shape of a pitcher, but spreading at top, shorter than the corolla. Anthers oblong, versatile.

^a Loureiro.

^o Billardiere.

PIST. Germ five-cornered, beaked. Style awl-shaped, longer than the filaments, permanent. Stigmas five, reflex.

PER. Capsule five-grained, beaked, the cells opening inwards, each having a long tail fixed to it, which becomes spiral, and is hairy or bearded on the inside.

SEEDS solitary (feldom two together,) ovate-oblong.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. five-petalled. Neet. five scales, alternate with the filaments, and glands at the base of the filaments. Fruit five-grained, with a spiral beak, bearded on the inside.

SPECIES.

* Leaves compound or pinnatifid.

1. *Erodium absynthoides*. Wormwood-leaved Crane's-bill.

L'Herit. ger. n. 1.

G. orientale moschatum absynthii folio. Tournef. cor. 20.

Caulescent, peduncles four-flowered or thereabouts, leaves interruptedly bipinnate laciniate, segments linear.

2. *Erodium chrysanthum*. Golden-flowered Crane's-b.

L'Herit. ger. n. 2.

Almost stemless, peduncles four-flowered, leaves decomposedly pinnate laciniate silky.

3. *Erodium trichomanifolium*. Maidenhair-leaved Crane's-bill.

L'Herit. ger. n. 3.

Stemless, scapes leafless four-flowered, leaves bipinnatifid hirsute.

4. *Erodium pulverulentum*. Hoary-leaved Crane's-b.

L'Herit. geran. n. 4.

Caulescent, peduncles many-flowered, leaves decomposedly laciniate mealy hoary.

5. *Erodium crassifolium*. Upright Crane's-bill.

L'Herit. geran. n. 5. *Ait. hort. kew.* 2. 415.

G. pulverulentum. Cavan. diff. 5. 396. t. 135. f. 1. Umbels many-flowered, leaves pinnatifid-laciniate thick, segments linear.

6. *Erodium foetidum*. Stinking Crane's-bill.

L'Herit. ger. n. 6.

G. foetidum. Park. theat. 709. *Lob. illustr.* 134. *Mor. hist.* 517. f. 5. t. 14. f. 7.

G. petraeum. Gouan illustr. 45. t. 21. f. 1. *Cavan. diff.* 4. n. 315. t. 96. f. 2. *Magn. bot.* 109. t. 8. *Tournef. inst.* 269.

Almost stemless, scapes radical many-flowered, leaves interruptedly bipinnatifid, petals roundish.

7. *Erodium macrademum*.

L'Herit. ger. n. 7. t. 1.

G. glandulosum. Cavan. diff. 5. n. 395. t. 125. f. 2. Subcaulescent, scapes radical many-flowered, leaves interruptedly bipinnatifid, petals ovate.

8. *Erodium supracanum*. Silky-leaved Crane's-bill.

L'Herit. ger. n. 8. t. 2.

G. rupestre. Cavan. diff. 4. n. 316. t. 90. f. 1. Almost stemless, scapes radical two-flowered or thereabouts, leaves interruptedly bipinnatifid thickish silky-hoary on the upper surface.

9. *Erodium petroselinum*. Parsley-leaved Crane's-b.

L'Herit. ger. n. 9.

G. bipinnatum. Cavan. diff. 5. n. 399. t. 126. f. 3. *G. numidicum. Poir. barb.* 2. 201.

Peduncles two-flowered, leaves pinnate, leaflets pinnatifid, segments linear.

10. *Erodium alpinum*. Alpine Crane's-bill.

L'Herit. ger. n. 10. t. 3.]

G. alpinum. Burm. ger. 30. *Mill. dict. n.* 12. *Cavan. diff.* 4. n. 323. t. 96. f. 1. *Bocc. mus.* 93. t. 82. *Tournef. inst.* 269.

Peduncles many-flowered, leaves interruptedly pinnatifid-laciniate.

11. [*Erodium romanum*. Roman Crane's-bill.

L'Herit. geran. n. 11. *Ait. hort. kew.* 414.]

Geranium romanum. Lin. spec. 951. *syft.* 615. *Reich.* 3. 317. *Burm. ger.* 30. *Mill. dict. n.* 41.

G. acaule. Lin. syft. ed. 10. p. 1143.

G. myrrhinum tenuifolium, amplo flore purpureo. Barrel. ic. 1245.

Stemless, scapes radical many-flowered, leaves pinnate, leaflets pinnatifid.

- [12. *Erodium cicutarium*. Hemlock-leaved Crane's-b. L'Herit. geran. n. 12. Ait. hort. kew. 2. 414.
Geranium cicutarium. Lin. spec. 951. Reich. 3. 317. hort. cliff. 344. 10. fl. suec. n. 625. Burm. ger. 33. Cavan. diff. 4. n. 318. t. 93. f. 1. Gouan illustr. 46. Hudf. angl. 300. Wither. arr. 722. Curt. lond. 1. t. 51. Lightf. scot. 366. Relb. cant. n. 497. Hall. belv. n. 944. Scop. carn. n. 853. Pollich pal. n. 646. Leers herb. n. 533. Neck. gallob. 290. Krock. fles. n. 1106. Villars dauph. 3. 367. Fl. dan. t. 986.
 β. Rivin. pent. t. 114. (G. robertianum). Raii syn. 358. Dill. giff. 173. & app. 69. With. 724.
G. cicutæ folio minus & supinum. Baub. pin. 319. Dill. giff. 48. — inodorum. Ger. 800. f. 3. 4. emac. 945. 3. Raii syn. 357. hist. 1057. 8. Mor. hist. 2. 512. f. 5. t. 15. f. 9. Pet. brit. t. 65. f. 3.
G. septimum f. *gruinum*. Dod. pempt. 64. Lob. ic. 659. 1.
G. moschatum, folio ad myrrhidem accedente, minus. Baub. hist. 3. 479.
G. chærophyllum. Cavan. diff. 4. n. 319. t. 95. f. 1. & *G. præcox*, diff. 5. n. 398. t. 126. f. 1.
 Peduncles many-flowered, leaves pinnate, leaflets sessile pinnatifid.
 13. *Erodium moschatum*. Musk Crane's-bill. L'Herit. geran. n. 13. Ait. hort. kew. 2. 414.]
Geranium moschatum. Lin. spec. 951. Reich. 3. 318. mat. med. 165. Burm. ger. 29. Mill. dict. n. 17. Gært. fruct. 383. Hudf. angl. 300. Wither. arr. 725. Hall. belv. n. 945. Scop. carn. n. 854. Jacqu. hort. 1. 22. t. 55. Blackw. t. 150. Rivin. pent. 112. Ger. 796. emac. 941. Park. theat. 709. f. 1. Raii hist. 1057. 10. syn. 358. Petiv. brit. t. 65. f. 2. Mor. f. 5. t. 15. f. 10.
G. cicutæ folio moschatum. Baub. pin. 319. — ad myrridem accedente majus. Baub. hist. 3. 479.
G. primum. Fuchs. hist. 204.
 Peduncles many-flowered, leaves pinnate, leaflets subpetioled unequally gashed.
 [14. *Erodium tordylioides*. L'Herit. ger. n. 14.
 Peduncles many-flowered, leaves bipinnatifid unequally serrate, the outmost lobes confluent.
 15. *Erodium gruinum*. Broad-leaved annual Crane's-bill. L'Herit. geran. n. 15. Ait. hort. kew. 2. 415.]
Geranium gruinum. Lin. spec. 952. Reich. 3. 320. hort. cliff. 498. n. 25. Burm. ger. 32. Mill. dict. n. 18.
G. creticum annuum hæmatodes. Lob. ic. 662. Mor. hist. f. 5. t. 15. f. 12.
G. latifolium longissima acu. Baub. pin. 319.
 Peduncles many-flowered, leaves ternate crenate-toothed, the outmost pinnatifid-lobed.
 16. [*Erodium ciconium*. Long-beaked Crane's-bill. L'Herit. n. 16. Ait. hort. kew. 2. 415.]
 α. *Geranium ciconium*. Lin. spec. 952. Reich. 3. 320. aman. 4. 282. Burm. ger. 28. Mill. dict. n. 19. Jacqu. hort. 1. t. 18. Cavan. diff. 4. 322. t. 95. f. 2.
G. cicutæ folio acu longissima. Baub. pin. 319. prodr. 138. Garid. gallopr. 207. t. 40.
 [β. *G. Botrys*. Cavan. diff. 218. n. 304. t. 90. f. 2. Bocc. mus. 145. t. 109. ind. 9. Hairy Crane's-bill.
 17. *Erodium lacerum*. L'Herit. ger. n. 17.
G. laciniatum. Cavan. diff. 4. n. 321. t. 113. f. 3.
G. fol. alceæ, &c. Boerb. ind. alt. 266. Rand. æt. angl. 1725. vol. 33. p. 307. Mart. dec. t. 16.
 Peduncles many-flowered, leaves doubly-pinnatifid, segments very remote linear quite entire.
 18. *Erodium diphylum*. L'Herit. ger. n. 18.
G. procumbens althææ folio. Raii hist. 1056. Cup. cathol. 85. suppl. 32.
G. creticum humifusum, fol. subrotundis laciniatis, acu longissima. Tournef. cor. 19.

Peduncles many-flowered, involucre two-leaved roundish, lower leaves three-lobed, upper pinnatifid lacinate gashed.

19. *Erodium muticum*. L'Herit. ger. n. 19.
 Peduncles many-flowered, leaves ternatifid gashed toothed, calyxes awnless.
 20. *Erodium hymenodes*. L'Herit. ger. n. 20. t. 4.
G. trifolium. Cavan. diff. 4. 314. t. 97. f. 3.
 Peduncles many-flowered, leaves ternate or ternatifid, segments roundish lobed.
 21. *Erodium incarnatum*. Flesh-coloured Crane's-bill. L'Herit. ger. n. 21. t. 5. Ait. hort. kew. 2. 415. Curt. magaz. 261.
G. incarnatum. Linn. suppl. 306. Cavan. diff. 4. n. 313. t. 91. f. 2.
 Peduncles few-flowered, leaves three-parted or ternate trifid rugged, stem somewhat shrubby.
 ** Leaves lobed, or undivided.
 22. *Erodium malacoides*. Mallow-leaved Crane's-bill. L'Herit. ger. n. 22. Ait. hort. kew. 2. 415.]
 α. *G. malacoides*. Lin. spec. 592. Reich. 3. 318. Burm. ger. 34. Mill. dict. n. 45. Cavan. diff. 4. n. 307. t. 91. f. 1.
G. fol. althææ. Baub. pin. 318. Mor. hist. f. 5. t. 15. f. 7. Riv. pent. t. 111. Lob. ic. 662.
G. sextum. Matth. hist. 859.
 [β. *Geranium chium*. Lin. spec. 951. Cavan. diff. 4. n. 310. t. 92. f. 1. Tournef. cor. 20.
G. murcicum. Cavan. diff. 5. n. 397. t. 126. f. 1.
 Various-leaved Crane's-bill.
 Peduncles many-flowered, leaves heart-shaped three-lobed, lobes lobed obtuse obsolete-toothed.
 23. *Erodium populifolium*. L'Herit. ger. n. 23.
 Peduncles many-flowered, leaves heart-shaped sublobed obtuse toothed, stamens hirsute.
 24. *Erodium nervulosum*. L'Herit. ger. n. 24.
G. supinum, &c. Bocc. mus. 2. t. 128. ind. 9.
G. procumbens althææ folio. Raii hist. 1056?
 Peduncles many-flowered, leaves heart-shaped almost undivided toothed thick nerved.
 25. *Erodium glaucophyllum*. Glaucous Crane's-bill. L'Herit. ger. n. 25. Ait. hort. kew. 2. 416.]
G. glaucophyllum. Lin. spec. 952. Reich. 3. 319. Mill. dict. n. 46. Dill. elth. 150. t. 124. f. 150.
G. glaucum. Burm. ger. 62. f. 62.
 Peduncles many-flowered, leaves oblong obsolete crenate glaucous, beaks feathered.
 [26. *Erodium guttatum*. L'Herit. ger. n. 26. Shaw afr. f. 260.
 Peduncles three-flowered, leaves heart-shaped obsolete lobed tooth-serrate ash-coloured, the centre of a different colour.
 27. *Erodium maritimum*. Sea Crane's-bill. L'Herit. ger. n. 29.
G. maritimum. Lin. spec. 951. Reich. 3. 319. Hudf. angl. 301. Wither. arr. 725. Neck. gallob. 290. Raii syn. 357. Pluk. phyt. t. 31. f. 4. Mor. hist. f. 5. t. 35. f. 10. row. 3. Petiv. brit. t. 65. f. 1.
 Peduncles three-flowered or thereabouts, leaves heart-shaped gashed crenate rugged, stems depressed.
 28. *Erodium chamædryoides*. Dwarf Crane's-bill. L'Herit. ger. n. 31. t. 6. Ait. hort. kew. 2. 416.
G. chamædryoides. Cavan. diff. 4. 197. n. 272. t. 76. f. 2.
G. parvulum. Scop. insubr. 1. 8. t. 3.
G. Reichardi. Murr. comm. gott. 1780. p. 11. t. 3. Curt. magaz. 18.
G. æstivum minimum, &c. Bocc. mus. 160. t. 128.
 Almost stemless, peduncles one-flowered, leaves heart-shaped obtuse crenate.

DESCRIPTIONS, &c.

The genus *Geranium* was first separated into three genera by Monsieur L'Heritier. Of these this of *Erodium* is one, *Pelargonium* is a second, and the third retains the old name of *Geranium*. The division

vision is convenient on account of the prodigious number of species, but they must still be considered as making only one natural genus.

1. This seems to differ from the next species in being caulescent, and in having the segments of the leaves linear and subvillose, not oblong and filky, as in that. Found in Armenia by Tournefort, and on mount Olympus by John Sibthorp, M. D.

2. This is very distinguishable by its yellow flowers. Found on mount Parnassus by John Sibthorp, M. D.

3. It may be doubted whether this be any thing more than a variety of the preceding. It differs however in having the flowers flesh-coloured marked with lines; the leaves smaller and less cut, the scapes leafless and radical; whereas *E. chrysanthum* becomes branched when in flower. Found on mount Libanus by Billardiere.

4. The plant is wholly covered with frequent short villose hairs, whence it has the appearance of being dusty. It is certainly allied to the first and second species, from which it differs in its dusty habit, in having the leaves decomposedly lacinate not interruptedly bipinnate, the flowers more numerous in the umbel, and the fruits only one-third of the length. Found by Louiche Desfontaines in the kingdom of Tunis.

5. In appearance this resembles *Pelargonium myrrhifolium*. It differs from the three next, in having thick leaves, pinnatifid not interruptedly pinnate, bractes larger, and roundish not lanceolate, the herb caulescent, and the root more slender not thick.

Found in the island of Cyprus by John Sibthorp, M. D. and introduced here in 1788. It flowers in april and may.

6. All the leaves are heaped about the root; they are hoary with hairs, the whole forming a triangle; pinnae commonly three or four pairs, the outmost smaller; pinnules pinnatifid, with the leaflets acute, bifid, trifid or entire; between these are leaflets which are entire. Petioles twice or three times the length of the leaves, hoary with shining hairs. Scapae scarcely three inches high, round, hispid with pellucid hairs, bearing from one to six flowers. Pedicels equal, half an inch long, pubescent. Calyxes large, striated, very hirsute; leaflets blunt, membranaceous at the edge, ending in a short awn. Corolla large, blue-purple or red. Seeds oblong, with the beaks only double the length of the calyxes.

Lobel reports it to be abominably fetid. L'Heritier says it is singular in having a very strong nauseous smell like some of the class Syngenesia; and according to Gouan, it has a strong smell, but neither nauseous nor musky.

Native of the country about Montpellier. It seems to have been cultivated here in the time of Parkinson.

7. This is allied to the preceding. The herb is entirely the same. The leaves, which are very much alike, are more finely lacinated and more slender in this; they are subcanescent in *E. foetidum*, not paler, as in this. *E. macrademum* has also a turpentine or musky smell. Petals roundish equal concolor purplish flesh-coloured, marked with deeper lines, with villose claws in that; in this they are ovate, nearly equal, the two upper ones scarcely larger but marked with dark violet-coloured veins, and the claws are naked. Filaments erect in that, reclining after flowering time in this. Glands very large globular broader than long in *E. macrademum*; subbilobed in *E. foetidum*.

Native of Spain.

8. This is very nearly allied to the two preceding and to *E. romanum*. In the last the plant is larger and substrigose, the leaves simply not interruptedly pinnate, and the leaflets gash-pinnatifid: in *E. foetidum* and *macrademum* the plant is hirsute, the leaves interruptedly bipinnate, the leaflets pinna-

tifid-lacinate: in this the habit of the plant is hoary and filky, on account of the upper surface of the leaves being so, the peduncles are few-flowered, and the leaves interruptedly bipinnatifid.

Found in Montserrat in Catalonia by Broussonet, Sibthorp and Pourret.

9. This has the habit of the three last, from which however it differs in having pinnatifid leaves, not interruptedly so, and elongated stems.

Found on the sandy coasts of Barbary by Poiret.

10. Root perennial, running very deep into the ground. Lower leaves smooth and on very long footstalks. Stems a foot and half high, with leaves of the same form, but smaller and opposite. Flowers purple, many together on very long peduncles. [The calyx is awned: the petals are about twice as large, and entire.

Native of Italy.]

The seeds were sent to Mr. Miller by Micheli. — It flowers here in June, but the seeds do not ripen in England.

11. This has a pretty thick tuberous root. Stems irregular, branching, diffused, somewhat woody, and having swelling joints; at each of these is one leaf, opposite to which comes out the peduncle: the peduncles on the lower part of the stem are very long and naked, but those which terminate the branches are shorter, and have one or two small leaves at their base; the flowers are in small bunches, and continue in succession most part of the summer. [L'Heritier doubts whether it be specifically distinct from *E. cicutarium*.

Native of Italy, about Rome, on the Pyrenees, also of Provence. — It was cultivated in the botanic garden at Chelsea in 1724.

12. Root annual. Stems several, thickish, round, hirsute, procumbent and branched. Pinnae of the leaves slightly hairy; pinnules sharply indented. Stipules at the base of the leaves membranaceous, whitish, acutely ovate, the uppermost entire, the lowermost generally divided into two. Peduncles axillary, alternate, hirsute, the length of the leaves. Flowers in an umbel, from three to six, of a rose-colour. Calycine leaflets ovate, striated, hirsute, ending in a fine point. Petals subovate, flat, nearly equal, hairy at bottom, somewhat longer than the calyx. Anthers deep purple. Nectareous glands brown. Germ villose: style awl-shaped, grooved: stigmas purple. Seeds brown: aril hirsute: awn long, hairy.

This species varies extremely, from nearly smooth to very hairy, and from very large and branched, with a many-flowered umbel, to small and nearly simple, with few flowers.

β. *Geranium pimpinellæ folio* of Dillenius is a remarkable variety; the petals irregular, the two upper shorter, rounder, and marked with a greenish spot at the base.

The wings of the leaves have deeper winged clefts, and the pinnules are nearly linear, rarely jagged. Sometimes only one petal is spotted, sometimes three or four, nay even all five; the spotted ones are always broad and short, and in the last case the corolla became regular.

The common sort is found all over Europe, in Africa, Asia, North America, and the island of Madeira. The last-mentioned variety has been found in England near Hackney, and in several parts of Suffolk.

13. This is very like the preceding, but has an ambrosial or musky scent; the whole plant is covered with hairs, which are glutinous, particularly those of the calyx. All the parts are larger; the stem is swollen and crooked at the joints. The wings are fewer in the leaves, ovate, sometimes only serrate or jagged, rarely pinnatifid. Peduncles thickly set with fine white hairs, ending in pellucid globules, with from four to ten flowers, forming a roundish head. Corolla red or purple. Annual.

^d L'Heritier.

^e Woodw. Mfs.

^f Ibid.

^g L'Heritier.

^h Ibid. and With.

ⁱ Hort. kew.

^j Woodw. Mfs.

^k Curtis.

Native of England, France, Switzerland, the Cape of Good Hope, Syria, Barbary, Peru. With us about Battersea, Streatham, &c. near London, near Bristol, Stourbridge; in Westmoreland and Yorkshire.

14. This seems to differ from the preceding in having a perennial root, and bipinnate leaves; but it is perhaps no more than a variety.

Found on rocks near Algiers by Desfontaines^m.]

15. This is an annual plant with very broad leaves, cut on their sides regularly and crenate. Flowers on long axillary peduncles. Petals entire and blue. Beaks of the fruit remarkably large. [The stem is quite smooth, whereas in the next species it is rough with hairs or strigose.

Native of Spain, Sicily, Candia, Cyprus, Syriaⁿ. Cultivated in 1596 by Gerarde^o.]

16. This also is an annual plant, which has several prostrate stems near a foot long. Peduncles axillary, three inches long. Flowers pale blue. Beaks of the fruit very long, but by no means so long or large as those of the preceding.

[Native of the South of Europe, Barbary, Syria, Cyprus, Madeira.—Cultivated in the botanic garden at Chelsea in 1724^p.

β. In this variety the whole plant is rough with hairs. It is a native of Spain, Portugal and Italy, on sandy coasts.

17. Stem grooved, branched, more than a foot high. Leaves opposite, longer than the petioles, divided almost to the petiole, into three pinnated segments; the pinnules linear with a point. Stipules scarious, broadish. Peduncles alternately axillary, longer than the leaf. Involucre scarious, multifid: rays six or more, half an inch long. Calyx ovate, ten-streaked; leaflets ovate, awned. Corolla a little larger, very pale blue, with equal petals. Fruit rufescent, with a beak two inches long^q.

Native of Portugal.

18. The involucre is composed of two opposite, membranaceous, largish bractes, that are very conspicuous, and give it the significant trivial name.

Native of Portugal, Gibraltar, Algiers, Tunis, Candia, and Cyprus. Annual^r.

19. Calyxes without any awns. Leaves a little resembling those of *A. Ceterach*.—Found by Desfontaines in the kingdom of Tunis^s.

20. The stem is scaly at the base with membranaceous stipules, larger than in any other species.—Found by Desfontaines on rocks in Barbary^t.

21. This has the habit of *Potentilla*, with a slender, smooth, hard stem, inclining to shrubbiness. The leaves are on very long petioles, heart-shaped, roundish, undivided, small. Stipules lanceolate, very sharp. Flowers red, flesh-coloured, or scarlet with a paler disk^u.

Native of the Cape of Good Hope. Introduced in 1787, by Masson^v.]

22. This is an annual plant, with the lower leaves heart-shaped and three-lobed. Branches inclining to the ground, and spreading a foot and half each way. The peduncles are placed on the side of these, and sustain many bright-red flowers. The fruits have long beaks.

[Native of the South of Europe, Madeira, Barbary, Syria, the islands of the Archipelago and in Peru. Cultivated in 1596, by Gerarde^w.

β. The variety is native of the island of Chio.

23. This has the habit of the preceding; from which however it seems to differ in its stipulation, and in the hirsuteness of the filaments, which are smooth in *malacoides* and *chium*.—Found in Barbary by Poiret^x.

24. Monf. L'Heritier doubts whether an older plant of this might not prove to be the same with *E. diphyllum* or *lacerum*.—Native of Sicily.]

25. This is an annual plant, [with leaves very like those of *E. malacoides*, but smooth. Stem ex-

tremely simple, very short. Peduncles from three to five-flowered. Corolla purple or pale blue, with a dark trifid line at the base^y. It is easily known by the gray or glaucous colour of the leaves, and the very long feathered beaks to the fruit.

Native of Egypt^z. Cultivated here in 1732, by James Sherard, M. D.^{aa}

26. This is very nearly allied to the preceding, but the herb is filky and hoary, not naked and glaucous, as in that. The leaves approach more to the heart shape, whereas in *glaucophyllum* they are oblong. The calyxes have also longer awns. The flowers are violet-coloured with a very dark violet disk, and are extremely sweet-scented.

Found by Shaw and Desfontaines in Barbary^{ab}.

27. Stems branched, lying close to the ground. Root-leaves on long petioles, spreading in a circle on the ground, hairy, variously cut and jagged, sometimes nearly lobed: stem-leaves similar. Peduncles shorter than the leaves. Flowers one to three, pale red, small. Beaks of the fruit very small, not exceeding half an inch in length^{ac}.

Native of England and Holland, on the coast, Norfolk and Cornwall. Also on sandy commons in Worcestershire.

28. Leaves radical, on very long petioles, numerous, orbiculate-heart-shaped, shining, much shorter than the petioles. Scapes a little longer than the petioles, with opposite bractes. Petals white, quite entire, oblong, with villose claws, between which are green fleshy obcordate glands^{ad}.

Native of Minorca and Corsica.—It has been known many years to the nursery-men by the name *G. Reichardi*, in compliment to a French gentleman, who first discovered it in the island of Minorca^{ae}.

PROPAGATION AND CULTURE.

See GERANIUM.

EROTEUM. (So named by Swartz, I presume from *Epws.*)

Lin. gen. Schreb. n. 1757. 2. p. 807. Swartz prodr. 85.

Class. 13. 1. Polyandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth five-leaved; leaflets ovate, concave, incumbent, permanent.

COR. Petals five, ovate-roundish, concave, entire, spreading.

STAM. Filaments numerous (thirty), shorter than the petals, erect, filiform, placed on the receptacle. Anthers roundish, minute.

PIST. Germ ovate, pubescent, superior. Style erect, generally longer than the stamens, awl-shaped, trifid at the tip, permanent. Stigmas obtuse, simple, reflex.

PER. Berry roundish, juiceless, acuminate with the permanent style, smooth, three-celled.

SEEDS in threes or fours, oblong, compressed a little.

OBS. It has the inflorescence flower and habit of *Thea*, but the fruit is of a different kind.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. five-petalled. Style trifid. Berry juiceless, three-celled, many-seeded.

SPECIES.

1. *Eroteum thæoides*.

Swartz prodr. 85.

Leaves ovate-lanceolate serrate-toothed, flowers axillary solitary.

2. *Eroteum undulatum*.

Swartz prodr. 85. Vahl symb. 2. 61.

Leaves elliptic-lanceolate acuminate serrate, flowers crowded axillary.

DESCRIPTIONS, &c.

1. Native of Jamaica^b.

2. Branches flexuose at top, hairy-tomentose, especially towards the tip. Leaves alternate, two or three inches long, coriaceous, broad lanceolate, acute at both ends, smooth, paler underneath, thicker at the edge; the younger ones nerved and hairy underneath. Petioles very short. Peduncles four or

^m L'Heritier. ⁿ Ibid. ^o Hort. kew. ^p Ibid.
^q Cavanilles. ^r L'Heritier. ^s Ibid. ^t Ibid.
^u Ibid. and Cavan. ^v Hort. kew. ^w Ibid.
^x L'Heritier.

^y Linn. ^z L'Heritier. ^{aa} Hort. kew. ^{ab} L'Herit.
^{ac} Wood. Mss. ^{ad} Cavanilles. ^{ae} Curtis. ^{af} Swartz.

five, but sometimes solitary, one-flowered, the same length with the petioles. Calycine leaflets ovate, very finely ciliate, obtuse.

It varies with smooth branches¹.

Native of Jamaica, St. Christopher's, Montserrat, Guadaloupe, &c.^k

ERUCA. See *Arabis*, *Brassica*, *Bunias*, *Cheiranthus*, *Erysimum*, *Sinapis*, *Sisymbrium*.

ERUCAGO. See *Bunias* and *Reseda*.

ERUCASTRUM. See *Brassica*.]

ERVUM, (of Pliny; from the greek *Ορεος*, changing β into ν , as from $\beta\alpha$, *vis*, from $\beta\omega$, *vivo*, from $\beta\sigma\tau\omega$ *vescor*.)

Lin. gen. n. 874. Reich. 948. Schreb. 1188. Gertn. t. 151. Tourn. 221. Juss. 360. Lens. Tourn. 210.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceæ* or *Leguminosæ*.

GENERIC CHARACTER.

CAL. Perianth five-parted, length of the corolla: divisions linear, acuminate, nearly equal.

COR. Papilionaceous.

Standard flat, slightly reflex, roundish, larger.

Wings obtuse, shorter by half than the standard.

Keel shorter than the wings, acuminate.

STAM. Filaments diadelphous (simple and nine-cleft) rising. Anthers simple.

PIST. Germ oblong. Style simple, rising. Stigma obtuse, beardless.

PER. Legume oblong, obtuse, columnar, knotty with the protuberant seeds.

SEEDS four, usually roundish.

OBS. This genus differs from *Vicia* in the stigma alone.

Ervum, Tourn. has an oblong torulose legume with globular seeds.—Lens, T. has an ovate compressed legume with orbiculate seeds convex on both sides. In *Vicia*, T. it is oblong with roundish seeds. Juss. *E. tetraspermum* has the stigma bearded, when viewed through a microscope. The calyx has five unequal teeth. With.

ESSENTIAL CHARACTER.

Calyx five-parted, the length of the corolla.

SPECIES.

1. *Ervum* Lens. Flat-seeded Tare or Common Lentil.

Lin. spec. 1039. Reich. 3. 476. mat. med. 172. hort. upf. 224. cliff. 370. (Cicer.) Scop. carn. n. 900. Leers herb. n. 587. Krock. files. n. 1178.

Lens. Fuchs. 899. Dod. pempt. 526. Hall. belv. n. 421. Riv. tetr. t. 35. Baub. hist. 2. 317. Raii hist. 904.

L. minor. Ger. 1049. 2. emac. 1224. 2.

L. major vel minor. Park. theat. 1068. Mor. hist. 2. f. 2. t. 3. f. 9, 10.

L. vulgaris. Baub. pin. 346.

β . L. major. Baub. hist. 2. 317. Baub. pin. 346. Ger. 1049. 1. emac. 1224. 1. Raii hist. 904. Riv. tetr. t. 35.

About two flowers on a peduncle, seeds compressed convex.

2. *Ervum* tetraspermum. Smooth Tare.

Lin. spec. 1039. Reich. 3. 476. fl. suec. n. 655. Hudf. angl. 320. With. 780. Curtis lond. 1. 55. abr. t. 15. Lightf. 397. Relb. cant. n. 528. Scop. carn. n. 902. Pollich pal. n. 689. Neck. gallob. 308. Leers herborn. n. 588. Krock. files. n. 1179. Fl. dan. t. 95.

Vicia gemella. Crantz. austr. 389. Hall. belv. n. 923.

V. segetum singularibus filiquis glabris. Baub. pin. 345.

V. minor. seg., cum fil. paucis glabris. Mor. hist. 2. 64. f. 2. t. 4. f. 16.

V. f. Cracca minimæ species cum filiquis glabris. Baub. hist. 2. 315. 2. Raii hist. 902.

Cracca minor cum fil. gemellis. Riv. tetr. 53.

C. min. fil. singularibus, flosculis cærulescentibus. Hoffm. fl. Altorf. Raii syn. 322.

¹ Vahl.

^k Swartz.

About two flowers on a peduncle, seeds globular four in a legume.

3. *Ervum* hirsutum. Hairy Tare.

Lin. spec. 1039. Reich. 3. 477. fl. suec. n. 655. Hudf. angl. 321. With. 781. Curt. lond. 1. 54. abr. t. 16. Lightf. 398. Relb. cant. n. 529. Crantz. austr. 403. Scop. carn. n. 901. Pollich pal. n. 690. Leers herborn. n. 589. Fl. dan. t. 639. Krock. files. n. 1180. Neck. gallob. 308. Lin. hort. cliff. 370. (Cicer). Hall. belv. n. 422. (Vicia).

Vicia segetum cum filiquis plurimis hirsutis. Baub. pin. 345. Raii hist. 902. Mor. f. 15.

V. parva f. Cracca minor cum multis fil. hirs. Baub. hist. 2. 315. 1.

V. sylvestris f. Cr. minima. Ger. emac. 1228. 5?

Cracca minor. Tabern. ic. 507. Riv. tetr. t. 53. Raii syn. 322.

Arachus f. Cr. min. Park. theat. 1070.

Peduncles many-flowered, seeds globular two in a legume.

[4. *Ervum* solonienfe. Spring Tare.

Lin. spec. 1040. Reich. 3. 477. amæn. 4. 327.

Vicia pratensis verna f. præcox Solonienfis, sem. hexaedro. Mor. blæs. 321. hist. 2. 63. t. 4. f. 14. Raii hist. 902.

V. minima præcox parisiensium. Tourn. inst. 397. fl. par.

About two flowers on a peduncle awned, petioles acuminate, leaflets obtuse.]

5. *Ervum* monanthos. One-flowered Tare or Lentil.

Lin. spec. 1040. Reich. 3. 478. hort. upf. 219. (Vicia). Leers herborn. n. 950. Herm. lugdb. 360. (Lens monanthos).

Peduncles one-flowered.

6. *Ervum* Ervilia. Official Tare:

Lin. spec. 1040. Reich. 3. 478. hort. upf. 224. mat. med. 173. hort. cliff. 370. Hall. belv. n. 420. Sauv. monsp. 237. Leers herb. n. 591. Riv. tetr. t. 6. Blackw. t. 208. f. 3. Gertn. fruct. 2. 328.

Orobus filiquis articulatis, semine majore. Baub. pin. 346.

Lens minor. Camer. epit. 211.

O. f. *Ervum* multis. Baub. hist. 2. 321. Raii hist. 915.

O. receptus herbar. Ger. 1051. emac. 1225. Mor. t. 6. f. 1.

O. vulgaris herbariorum. Park. theat.

Ervum. Camer. epit. 215. Rivin. tetr. t. 61.

Germes naked and plaited, leaves unequally pinnate.

DESCRIPTIONS, &c.

1. The Lentil is an annual plant, and the least of the pulse kind which is cultivated. It rises with weak stalks a foot and half high, having pinnate leaves at each joint, composed of several pairs of narrow leaflets, terminated by a tendril, which supports it by fastening about some other plant. The flowers come out on short peduncles from the sides of the branches; they are small, of a pale purple colour, and three or four together. Legumes short and flat, containing two or three flat, round seeds, a little convex in the middle. The flowers appear in may, and the seeds ripen in july.

[Scopoli thus describes it in its wild state.—Stems many, simple, angular, a foot high. The upper leaves only terminate in a tendril: leaflets alternate, lanceolate, emarginate, protruding a short dagger-point from the notch, the lower surface villose. Stipules entire, narrow. Peduncles villose, sustaining from one to four flowers. Calyx villose. Standard of the corolla not emarginate. Sheath (or lower part of the filament) four-valved; the lateral valves have four stamens on each, the upper and lower one only. Germ peduncled. Legume has from one to three seeds.—Spontaneous in the corn fields of France and Germany, the pastures of Carniola, and the vineyards of the Valais.]

The common Lentil is cultivated either as fodder for cattle, or for the seeds which are used in soups. These are commonly eaten by the poorer sort in some islands of the Archipelago, and other warm countries.

countries. The contempt however in which they are held is apparent from the proverbial expressions, *Dives factus jam desit gaudere lente*; and *mira de lente*.

[The cultivation of this pulse does not seem to have been of very long standing in England: for Gerard says, 'these pulses (great and little Lentils) do grow in my garden (1596); and it is reported unto me by those of good credit, that about Watford in Middlesex (Hertfordshire) and other places of England, the husbandmen do sow them for their cattle, even as others do Tares.'—And Parkinson (in 1640) only says, that 'they are sown in some countries in our land, especially the smaller sort—but the greater doth very hardly come to maturity with us, if the season be not kindly and dry.'

2. Root annual. Stems in open places slender, weak and much branched; but among corn supporting themselves by tendrils to a foot or more in height: two-edged and inclined to four-cornered. Stipules in pairs; the lower semisagittate, the upper entire, or nearly so. Leaves pinnate; leaflets about five pairs (three to five C.), linear-lanceolate, approaching to linear; sometimes lanceolate, and tapering to a point: mostly inclined to alternate, terminated by a tendril, which is frequently simple. Flowers on slender capillary peduncles, as often single as in pairs: calyx somewhat hairy; the lower segments longest. Standard of the corolla slightly emarginate, the border streaked with purple; wings white and converging; keel obtuse. Corolla (according to Linneus) violet, often blood-coloured. Legumes perfectly smooth, inclining to cylindric, and containing four seeds, nearly globular, brownish mottled with black. According to Scopoli there are sometimes five seeds in a legume: and Mr. Woodward has remarked a variety near Cambridge, in which the legumes contain five, six or seven seeds, very rarely four. The stem was low and extremely branched. These differences could not proceed from luxuriance of soil, as the spot where it grew was a remarkably dry gravel.

This species is easily distinguished from the next, for in that the pods are hairy and contain only two seeds; in this they are smooth and contain four; in that the flowers grow in a kind of cluster, in this seldom more than two grow together. It is exceedingly fertile, one plant, casually pulled up, having two hundred and twenty pods on it. It is found in most corn-fields, clinging to the corn, and if the season favours its growth, sometimes quite over-coming it.

3. Annual. Stems weak, much branched, climbing, quadrangular, streaked, from one to two feet high. Lower stipules with two, three, or four awl-shaped teeth; the upper ones awl-shaped and entire. Leaflets mostly linear, sometimes lanceolate, eight to twelve pairs, somewhat alternate, terminated by a branched tendril. Peduncles axillary, shorter and not so slender as in the foregoing, bearing two, three or four flowers on very short hairy pedicels; when two, separate: if three, two together; if four, in pairs*. Calyx hairy, segments longer and more acute than in the foregoing. Legumes hairy, always containing two seeds.

Easily distinguished from the foregoing; the leaves not being pointed as in that, but truncate; the stipules divided into many more segments; the flowers, and consequently the legumes growing in a kind of cluster, being rough, and containing two seeds. It grows among corn, and is more destructive to it, being stronger and more prolific. In wet seasons whole crops are overpowered by this plant. All sorts of cattle eat it. These two are called *Tine-Tare*, that with *smooth pods*, and this with *rough pods*.

They are common in the eastern countries, the preceding in Japan, and this in Cochinchina.

4. Flower small, reddish. Legumes slender, an inch in length, with three or four minute hexadral

seeds in each. It is distinguished by its earliness, the tenuity of its parts, and the shape of its seeds. It appears at the close of winter in neglected pastures in France. Linneus thinks that it is allied to *Lathyrus angulatus*.

Cultivated in Chelsea garden in 1739. It flowers in april and may.

5. Larger than Lentil, climbing by means of bifid or trifid tendrils. Petioles horizontal. Leaflets sixteen to eighteen, linear retuse with a point. Stipules two, alternately larger, different in form: one very short, lanceolate, the other opposite, five times larger, petioled pedate-multifid; the segments bristle-form, very long, patulous. Peduncle one-flowered. Calyx three times shorter than the corolla, with the toothlets nearly equal. Standard compressed, whitish with violet veins. Legume large, somewhat nodding, containing two or three seeds, the size of Peas, compressed, with an obtuse margin. It is annual; and according to Linneus, the leaflets convolute.

Native of Russia and the county of Nice. Near Herborn in Germany among Lentils. It flowers from may to july. Cultivated in 1731, by Mr. Miller.]

6. This is an annual plant, rising with angular weak stalks a foot and half high, having at each joint one pinnate leaf, composed of fourteen or fifteen pairs of leaflets, very like those of the Vetch, but narrower. The flowers come out from the sides of the stalk, on peduncles an inch long, each sustaining two pale-coloured flowers, which are succeeded by short pods a little compressed, each containing three or four round seeds; the pods swell at the place where each seed is lodged. [Erect, not climbing. Stipules ovate, toothed. Leaflets eighteen to twenty-four, linear-oblong, retuse with a point. Petiole drawn out at the end into a dagger-point, instead of a tendril. Peduncles two or three-flowered. Calyx only half the length of the corolla, with toothlets nearly equal, the two upper ones de-cussated. Standard slightly emarginate with a point. Germ linear, straight, waved and plaited after flowering time. Legumes pendulous, jointed and knotted, containing three or four seeds, which are somewhat angular.

Native of France, Italy, and the Levant; also found in Germany and Switzerland, among Lentils. It flowers in june. Ray says it is common about Montpellier and Geneva.—Cultivated by Gerard in 1597.]

The seeds ground to flour are sometimes used in medicine abroad; and the green herb is employed for feeding cattle in some countries, but the plant is not worth cultivating for that purpose in England.

PROPAGATION AND CULTURE.

1. The seeds of Lentils are commonly sown in march, where the land is dry, but in moist ground april is the best time. The usual quantity of seed allowed to an acre is from a bushel and half to two bushels. If these are sown in drills in the same manner as Peas, they will succeed better than when they are sown broad-cast: the drills should be a foot and half asunder, to allow room for the hoe to clean the ground between them; for if weeds be permitted to grow, they will overtop and starve the Lentils. The seeds will ripen in july, when the plants should be cut and dried, and the seeds afterwards threshed out for use.

There is another sort (or rather variety) which is cultivated by the name of French Lentil. It is the *Lens major* of Caspar Bauhin, and is much better worth cultivating than the other. This pulse is frequently called *Tills* in some parts of England.

2, 3. These are small annual Tares which grow wild among Wheat and Rie in many parts of England, and are not admitted into gardens. They may be easily destroyed in the fields if they are cut up when they begin to flower.

4, 5, 6. May be cultivated in the same manner as common Lentils.

ERVUM ORIENTALE. See *Sophora*.

* Three to five, Withering; three to eight Curtis; four to six, Leers.

F.

FABA. See *Vicia*.

FABA dulcis. See *Cassia*.

FABA marina. See *Mimosa*.]

FABAGO. See *Zygophyllum*.

[**FABRICIA.** See *Melaleuca*.

FAGAGO. See *Zygophyllum*.]

FAGARA. (From φαγω, to eat.)

Lin. gen. n. 150. Reich. 157. Schreb. 196. Brown.

t. 5. f. 1. Gärtn. t. 68. Juss. 374.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of Dumosæ.—Terebintaceæ, Jussieu.

GENERIC CHARACTER.

CAL. *Perianth* four-cleft, very small: *leaflets* concave, permanent.

COR. *Petals* four, oblongish, concave, spreading.

STAM. *Filaments* four, (three to eight) longer than the corolla. *Antthers* ovate.

PIST. *Germ* ovate. *Style* filiform, length of the corolla. *Stigma* two-lobed, obtusish, (four-cleft in *F. Euodia*.)

PER. *Capsule* globular, one-celled, (or two-celled, *G.*) two-valved.

SEED single, round, bright.

ESSENTIAL CHARACTER.

Cal. four-cleft. *Cor.* four-petalled. *Caps.* two-valved, with one seed.

SPECIES.

[1. *Fagara Euodia.* Sweet-scented *Fagara*.

Lin. syst. 160. suppl. 125. Forst. fl. austr. n. 54.

Euodia hortensis. Forst. gen. n. 7.

Leaves simple lanceolate elongated opposite, racemes branched axillary solitary.

2. *Fagara trifoliata.* Three-leaved *Fagara*.

Swartz prodr. 33.

Leaves ternate, leaflets obovate subemarginate entire shining dotted underneath.].

3. *Fagara Pterota.* Lentiscus-leaved *Fagara*, or Bastard Ironwood.

Lin. spec. 172. syst. 160. Reich. 1. 333. amæn. 5.

393. mat. med. 52. Lin. spec. ed. 1. 389.

(*Schinus*). *Brown. jam. 146. t. 5. f. 1.*

(*Pterota*). *Sloan. jam. 2. 25. t. 162. f. 1. Raii*

dendr. 86. n. 30. (Lauro affinis).

Leaflets emarginate.

[4. *Fagara Piperita.* Ash-leaved *Fagara*.

Lin. spec. 172. Reich. 333. Gärtn. fruct. 334.

Thunb. jap. 64. Kämpf. amæn. 5. 892. f. 893.

Lour. cochinch. 80.

Leaflets crenate.

5. *Fagara horrida.*

Thunb. in Linn. trans. 2. 329. fl. jap. 350. n. 3.

Leaves pinnate, pinnae ovate crenate, spines of the branches armed with spinules.].

6. *Fagara Tragodes.* Prickly-leaved *Fagara*.

Lin. spec. 172. Reich. 334. Jacqu. amer. 21.

t. 14. pict. 16. t. 19.

Schinus tragodes. Lin. spec. ed. 1. 369.—Schinoides.

hort. cliff. 489.

Rhus obsoniorum, &c. Pluk. alm. t. 107. f. 4?

Joints of the pinnae prickly underneath.

[7. *Fagara emarginata.*

Swartz prodr. 33. Sloan. jam. 2. 24. n. 13.

t. 168. f. 4. (Lauro affinis). Raii dendr. 88.

Leaves pinnate, leaflets ovate emarginate veined, racemes terminating compound, flowers three-stamened.

8. *Fagara spinosa.*

Swartz prodr. 33.

Leaves pinnate sessile ovate acuminate, both they and the branches spiny underneath, flowers three-stamened.

9. *Fagara acuminata.*

Swartz prodr. 33.

Leaves pinnate, leaflets entire elliptic acuminate shining coriaceous, flowers in cymes three-stamened.

10. *Fagara octandra.*

Lin. syst. 160. mant. 40. Reich. 334. Plenck,

ic. t. 65.

Elaphrium tomentosum. Jacqu. amer. 105. t. 71.

f. 1—3.

Leaflets tomentose.

DESCRIPTIONS, &c.

These are small trees or rather shrubs, some prickly, others not. The leaves are alternate, simple or ternate, more frequently unequally pinnate with the common petiole edged; they are thin and have pellucid dots. The flowers are fascicled or subracemed from the axils. The fruit is one-capsuled in the Linnean species; in the others two-capsuled, but in their habit very like the former; in *F. pentandra* of Aublet from three to five-capsuled, five-petalled, with three bractes under a five-toothed calyx; in *F. Euodia* four-capsuled, with all the parts of fructification in fours; in *F. octandra* one-capsuled, two-valved, containing one seed; this has four petals, eight stamens, one style, and a simple stigma. It abounds in a balsam, as in *Bursera*, especially in the fruit. Doubtful whether this be of the same genus, though the leaves be conformable^a.

1. Forster made a new genus of this species, under the title of *Euodia*, from its fine smell. But it has no distinct marks, except that the stigma is four-cleft, whereas in *Fagara* it is two-cleft; and that it has four capsules, whereas *Fagara* has but one^b.

Native of the Friendly Isles, and the New Hebrides^c.

2. This is a native of the island of Dominique^d.

3. A shrub with wrinkled branches. Leaves alternate, pinnate, with three pairs of leaflets, and the common petiole margined and jointed. Leaflets obovate, quite entire, emarginate, smooth. Spikes axillary, sessile, in pairs^e.

According to Browne, it rises by a branched and somewhat prickly stalk frequently to the height of eight or ten feet; the wood is very hard, and the branches are abundantly furnished with little leaves and small white flowers that rise on double spikes from the axils of the ribs. This shrub is very common in the lower lands of Jamaica. Dr. Houftoun found it at Campeachy.

Mr. Miller says it rises upwards of twenty feet high, and, that from the dried specimens which he received he is convinced there are some of the trees which bear male flowers.

[It has a goatish smell^f. Mr. Miller cultivated it in 1768. It flowers in august and september^g.

4. Stem shrubby, scarcely a fathom in height. Branches round, prickly, purple. Prickles scattered, horizontal. Leaves many, from the ends of the twigs, unequally pinnate, with about six pairs of leaflets; these are alternate and opposite, subsessile, ovate, emarginate, smooth, half an inch in length. Flowers among the leaves, terminating, paniced, small, white. Capsule wrinkled, one-celled, containing one smooth, black seed^h.

According to Loureiro, the leaves have only two or three pairs of leaflets, which are acuminate, shining, odoriferous, and spiny at the back; the flowers have red mixed with the white, and are in racemes on long peduncles.

Gärtner describes the capsule as small, almost globular, simple or double, coriaceous, scabrous on the outside with callous dots; having within a folded elastic plate the consistence of paper, either one or two-celled, and two-valved. It has one globular seed in each cell fixed to the gaping future in the middle; slightly acuminate and compressed at top, and having a small navel on the inside in the middle, almost of a bony consistence. In the Japanese

^a Jussieu.

^b Linn. suppl.

^c Forster.

^d Swartz.

^e Linn. amoen.

^f Linn. syst.

^g Hort. kew.

^h Thunberg.

Fruit the capsules are usually simple, but in those from China they are more frequently double.

Loureiro says that the capsule is four-lobed, and four-celled, and that the seeds are peduncled, protruded, black and shining.

The bark, leaves and fruit, being aromatic, are frequently used in soups, instead of spice. The bruised leaves made into a cataplasm with meal of rice are laid upon the parts afflicted with rheumatism, and on buboes¹.

The root, which is woody, with a corky, yellow bark, and a sharp subaromatic flavour, is warm, diaphoretic and emmenagogue, and is much esteemed in intermittent fever, rheumatism, &c.²

Native of China, Cochinchina, and Japan. Introduced in 1773, by Sir James Cockburn, Bart. It flowers in September³.

5. This is a small upright tree, smooth in all its parts. Branches alternate, striated, flexuose, upright, from ash-coloured purplish, elongated, almost simple. Spines scattered, rigid, purplish, spreading, an inch long, armed with alternate, spreading, smaller spinules. Leaves from the buds several, pinnate: pinnas opposite, subsessile, in many pairs (about seven), obtuse, very finely notched.

Native of Japan, where it is called *Sai katsumi*.

6. A shrub branching, almost erect, five feet in height. Prickles in pairs, subulate, recurved, strong, subaxillary, brown, shining; there is one similar but smaller, on the back of each joint of the leaves. These are alternate, sessile, pinnate-jointed: leaflets oblong, attenuated at the base, obtuse, quite entire, shining, sessile: joints usually six, in every respect similar to the leaflets. Flowers small, axillary, aggregate.

Native of Domingo; flowering in February⁴.

7. The trunk of this tree is the size of the human leg, sometimes beset with many short prickles. It rises twenty feet high, and its branches are inclined towards the ground. The wood is white, solid and odoriferous, with a pretty large pith. Leaves at the ends of the branches, consisting of two, three or more pairs of leaflets, without any odd one, opposite, at half an inch distance, smooth, dark green, an inch long, and three quarters of an inch broad in the middle. Flowers white, small, like those of Elder, three-petalled. Fruit round, the size of black Pepper. Seed black, smelling somewhat like Bay berries. The smoke of the wood in burning is odoriferous, and probably was the fine scent which Columbus found near the south shore of Cuba, on his discovery of that island.

Native of Jamaica and other islands of the West Indies⁵.

8, 9. Natives of Jamaica⁶.

10. An inelegant tree, frequently more than twenty feet in height, abounding in a balsamic glutinous juice, much like that of *Burseria* in its qualities. The wood is very white and light. The natives of some of the West India islands make saddles with it of one piece, they have no pad, and only a sheep-skin thrown over them, when they ride. Branches thick, few, long, irregular. Leaves pinnate, tomentose on both sides, winged, deciduous, coming out from the ends of the smaller branches with the flowers, or a little after them: leaflets on each side four, besides the odd one, ovate, obtuse, crenate, veined, scarcely an inch in length. Racemes many, simple, an inch or an inch and half long. Flowers very small, with white calyxes, and yellowish corollas: most of them have a very small germ immersed in the receptacle, with a double obtuse stigma, and no style; these I have observed to be abortive. Fruits green, the size of Peas; when broken, the valves distil drops of balsam. Seed blackish in the naked, whitish in the covered part; but the pulp, with which it is closely surrounded, is scarlet.

Native of Curaçao and the adjacent islands, flow-

ering in July and August.—Jacquin, from whom the above is taken, named it *Elaphrium*, from the lightness of the wood (*ελαφρία*).

PROPAGATION AND CULTURE.

These are tender plants, and must be kept constantly in the bark stove. They may be increased by seeds, and also by cuttings properly managed.

[FAGARA. See *Zanthoxylum*.]

FAGONIA. (So named by Tournefort, in honour of Mons. Fagon, Archiater to Louis XIV. and a great patron of botany.)

Lin. gen. n. 531. Reich. 579. Schreb. 731.

Tournef. t. 141. Juss. 296. Gært. t. 113.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Gruinales*.—*Rutaceæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets lanceolate, erect, patulous, very small, deciduous.

COR. Petals five, heart-shaped, spreading: claws long, slender, inserted into the calyx.

STAM. Filaments ten, subulate, erect, longer than the calyx. Anthers roundish.

PIST. Germ five-cornered, superior. Style awl-shaped. Stigma simple.

PER. Capsule round-acuminate, (five-cornered, G.) five-celled, five-lobed, ten-valved, the cells compressed.

SEEDS solitary, roundish, (ovate, G.)

ESSENTIAL CHARACTER.

Cal. five-leaved. Pet. five, cordate. Caps. five-celled, ten-valved, with one seed in each cell.

SPECIES.

1. *Fagonia cretica*. *Cretan Fagonia*.

Lin. spec. 553. Juss. 401. Reich. 2. 276. mant. 380. Gært. 2. 153. Curtis magaz. t. 241.

F. erecta. Mill. dict. n. 1.

Trifolium spinosum creticum. Baub. pin. 330. prodr. 142. Clus. hist. 2. 242. Ger. emac. 1217.

f. 3. Park. theat. 1113. 3. Raii hist. 1037.—*aculeatum cret.* Baub. hist. 2. 388. f. 389. 1.

Thorny; leaflets lanceolate, flat, even.

2. *Fagonia arabica*. *Arabian Fagonia*.

Lin. spec. 553. Reich. 2. 277. Shaw. afr. 229. Forsk. Egypt. 88.

Thorny; leaflets linear, convex.

3. *Fagonia hispanica*. *Spanish Fagonia*, or *F. without spines*.

Lin. spec. 553. Reich. 2. 276. Tournef. inst. 265.

Without thorns.

DESCRIPTIONS, &c.

[These are herbaceous plants with a woody base. The leaves are either simple or ternate; the stipules in the two first species become thorns. The flowers are solitary and axillary^a.]

1. This is a low plant, spreading its branches close to the ground, a foot or more every way.

[Stem four-parted, spreading, a foot high, channelled on the upper side, knotted and knee-jointed, (five-cornered, dichotomous, Juss.) Leaves opposite; petioled, ternate. Petioles submarginate, the length of the leaflets; which are equal, sessile, linear-lanceolate, mucronate, quite entire, (somewhat fleshy, Juss.) Stipules four, awl-shaped, spreading, becoming spines, short, bowed back. Peduncles lateral, axillary, solitary, one-flowered, alternate, erect, the length of the petiole, from the same axil with the branchlet. Petals violet-coloured or blue, spreading between the sinuses of the calyx with the very claws standing out above it. Capsule nodding, ovate-pyramidal, with the five corners compressed and subciliate^b; the cells compressed boat-shaped, opening at the keel. Receptacle columnar, five-cornered-subulate, placed in the axis of the fruit; the valves and setaceous umbilical chords are inserted into this, a little above the base. Seeds ovate, narrowing upwards; at bottom, where the umbilical chord is inserted, slightly emarginate; so compressed as to be almost like a leaf, ferruginous-brown, with very minute hollow dots^c.

¹ Thunberg. ² Loureiro. ³ Hort. kew. ⁴ Thunberg.
⁵ Jacquin. ⁶ Sloane. ^a Swartz.

^a Jussieu.

^b Linn. mant.

^c Gärtner.

It has the structure of the herb as in *Tribulus*, the flower of *Malpighia*, and is allied to *Zygophyllum*.]

Native of the island of Candia. It flowers in July and August, but unless the season proves warm, the seeds do not ripen in England.

[Cultivated in 1739, by Mr. Miller^d.]

2. This is a low plant with a shrubby stalk, from which come out several weak branches armed with long thorns; the leaves are thick, narrow, and convex on their under side; the flowers come out as in the first sort. [Petals not inserted into the calyx, nor cordate, but inserted into the receptacle; violet-coloured, oblong, emarginate. Leaflets linear, acute, flat, thickish, somewhat villose. Spines verticilled, in fours, longer than the leaves. Filaments not appendicled at the base^e.] It was discovered by Dr. Shaw in Arabia.

3. This differs from the first in being smooth, the branches having no thorns; it will also live two years, whereas that is annual. It is a native of Spain.

PROPAGATION AND CULTURE.

Sow the seeds upon a warm border of fresh light earth in autumn, where they are designed to remain, for they do not bear transplanting well; in frosty weather shelter the plants with mats, or some other covering; thin them out to the distance of ten inches or a foot, and keep them clean from weeds. Or rather sow them in pots, and place them under a frame in winter; the following spring shake them out of the pots, and plant them in a warm border: thus they will flower early, and ripe seeds may be obtained.

The second and third sorts seldom flower the first year: these, therefore, must be sheltered like the first for two winters.

FAGOPYRUM. See *Polygonum*.

FAGOTRITICO SIMILIS & FAGOTRITICUM. See *Polygonum*.

[FAGRÆA. (So named by Chevalier Thunberg, in honour of Jonas Theodor Fagræus, M. D.)

Lin. gen. Schreb. n. 276. Thunb. nov. gen. 34. nov. act. holm. Juss. 150.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Contortæ*.—*Apocineæ*. Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, bell-shaped, five-parted: divisions obtuse, incumbent, membranaceous at the end.

COR. one-petalled, funnel-shaped. Tube round, gradually widening to the top, long. Border twisted, five-parted: divisions oblong, oblique, obtuse, entire, patulous.

STAM. Filaments five, filiform, equal, inserted into the tube, shorter than the corolla: Anthers ovate, twin, vertical, convex outwards, four-furrowed, flat on the inner side, easily bipartite.

PIST. Germ superior. Style filiform, the length of the corolla. Stigma peltate, orbiculate, flat.

PER. Berry ovate, fleshy, covered with an epidermis, two-celled.

SEEDS orbiculate, smooth.

ESSENTIAL CHARACTER.

Cal. bell-shaped. Cor. funnel-shaped. Berry two-celled, fleshy. Seeds globular. Stigma peltate.

SPECIES.

1. *Fagræa zeylanica*.

Lin. syst. 198. Thunb. nov. gen. 35. act. holm. 1782. p. 132, t. 4.

DESCRIPTION, &c.

Stem becoming shrubby, erect, somewhat four-cornered, a finger in thickness, and two feet high. Leaves fastigiately opposite, petioled, frequent, obovate-oblong, very obtuse, entire, coriaceous, a hand broad, and a span long. Petioles semicolumnar, an inch in length. Flowers terminating, subumbelled, peduncled. The umbel has about three flowers. Peduncles one-flowered, bracted, half an inch in length. Bractes opposite, ovate, obtuse.—Native of Ceylon, where it flowers in December and January^f.]

^d Hort. kew.

^e Forsk.

^f Thunberg.

FAGUS. (From φαγω to eat. The fruit of this tree having been the common food of mankind in the early ages.)

Lin. gen. n. 1072. Reich. 1170. Schreb. 1448.

Gertn. t. 37. Juss. 409. Tournef. 351. Castanea. Tourn. 352. Mill. dict. & fig. 84.

Class. 21. 8. Monoecia Polyandria.

Nat. order of *Amentaceæ*.—*Fuliferæ*. Raii & Halleri.

GENERIC CHARACTER.

* Male flowers fixed to a common amentaceous receptacle.

CAL. Perianth one-leafed, bell-shaped, five-cleft. (four, five or six-cleft. Haller. subsexfid. G.)

COR. none.

STAM. Filaments many, the length of the calyx, setaceous. Anthers oblong.

* Female flowers in a bud of the same plant.

CAL. Perianth one-leafed, four-toothed, erect, acute.

COR. none.

PIST. Germ covered with the calyx. Styles three, subulate (one trifid. G.) Stigmas simple, reflex.

PER. Capsule (which was the calyx) roundish, very large, covered with soft spines, one-celled, two to four-valved.

SEEDS. Nuts one or two, ovate, three-cornered, three-valved, acuminate.

OBS. In the Beech (spec. 3.) the male flowers are in a ball. (Stamens eight. H.) In Chestnut (one, two), they are in a cylinder. (Stamens five to eighteen or twenty. Styles four to six or seven.)

ESSENTIAL CHARACTER.

MALE. Cal. five-cleft, bell-shaped. Cor. none. Stam. twelve.

FEM. Cal. four-toothed. Cor. none. Styles three. Caps. (which was the calyx) muricate, four-valved. Seeds two.

SPECIES.

1. *Fagus Castanea*. Common Chestnut-tree.

Lin. spec. 1416. Reich. 4. 166. hort. cliff. 447. upf. 287. mat. med. 203. Hudf. angl. 422. With. 1086. Gron. virg. 150. Hunt. evel. silva. 159—153. Allion. pedem. n. 1987. Pallas rofs. 2. 5. Lour. cochinch. 571. Villars dauph. 3. 796.

Castanea sativa. Mill. dict. n. 1. fig. t. 84. Scop. carn. n. 1187. Hall. helv. n. 1623. Blackw. t. 330.

Castanea. Cam. epit. 118. Ger. 1253. 1. emac. 1442. 1. Raii syn. 440.—*sylvestris* & *sativa*. Baub. pin. 418. Baub. hist. 1. 121. Raii hist. 1382.—*vulgaris*. Park. theat. 1400. 1.

Leaves lanceolate, with acuminate serratures; naked underneath.

2. *Fagus pumila*. Dwarf Chestnut-tree, or Chinquapine.

Lin. spec. 1416. Reich. 4. 167. Gron. virg. 150. *Castanea pumila*. Mill. dict. n. 2. Pluk. alm. t. 156. f. 2. Catesb. car. 1. t. 9. Duham. arb. 3.

Leaves lanceolate-ovate, acutely serrate, tomentose underneath, aments filiform, knotty.

3. *Fagus sylvatica*. The common Beech-tree.

Lin. spec. 1416. Reich. 4. 167. hort. cliff. 447. fl. suec. n. 871. mat. med. 203. Hudf. angl. 422. With. 1087. Lightf. scot. 584. Hunt. evel. silva p. 136—131. Hall. helv. n. 1622. Pollich pal. n. 910. Neck. gallob. 391. Willich. obs. 5. Allion. pedem. n. 1988. Gertn. fruct. 182. Pallas rofs. 2. 5. Villars dauph. 3. 796.

Castanea Fagus. Scop. carn. n. 1188.

Fagus. Baub. pin. 419. Camer. epit. 112. Matth. 205. Dod. 832. Ger. 1255. emac. 1444. Park. theat. 1403. Baub. hist. 1. 118. Raii hist. 1381. syn. 439.

[β. *F. purpurea*, foliis atrorubentibus. Purple-leaved Beech-tree. Du Roi hort. barbec. 1. 268. Leaves ovate, obscurely serrate.

4. *Fagus ferruginea*. American Beech-tree.

Ait. hort. kew. 3. 362.

F. americana latifolia. Du Roi hort. barbec. 1. 269. Leaves ovate-oblong, remotely and acutely serrate, acuminate, tomentose underneath.

5. *Fagus*

5. *Fagus cochinchinensis*.*Lour. cochinch. 571.**Leaves ovate, crowded: capsules three-celled, three-valved.*

DESCRIPTIONS, &c.

i. The Chestnut-tree had its name *Castanea* from a town of the name of *Καστανίς*, in Thessaly, about which this tree grew in great abundance. Theophrastus calls it *Δίος βάλανος*, and the nuts *καρύα Ευβοικα*, and *Δίος βάλανον*. The Greeks also called them *Αμύρα* and *Λοπιμα*. It has the same appellation in all the European languages. In German *Castanienbaum*; in Swedish and Danish *Castanietræ*; in French *Châtaignier*; in Italian *Castagno*; in Spanish *Castano*; in Portuguese *Castanheiro*. In Russian it is *Keschtan*.]

This tree will grow to a very great size, and spread its branches finely on every side where it has room; but planted closely, will shoot up straight to a great height. The leaves are large, of a lucid green; [they end in a long very taper point, and the serratures terminate in a kind of tender prickle^a; they are about four or five inches long, and two wide, somewhat wrinkled, having several transverse veins, prominent on the under surface, and proceeding from a strong midrib. The aments or catkins of male flowers are pendulous at the ends of the branches, very long, and resemble those of the walnut^b. They have a strong spermatic smell; the flowers are collected in remote little balls, and are sessile. The proportion of male flowers to the females is prodigious. The stamens are about nine in number; (five to eighteen. *H.*) In the female flowers the number of styles varies from four to seven, but six is the most common. The calyx becomes an echinate capsule of four valves, of a silky smoothness on the inside; and containing two nuts, sometimes three, or only one^c.

The Chestnut, in maturity and perfection, says Mr. Gilpin, is a noble tree, and grows not unlike the oak. Its ramification is more straggling, but it is easy, and its foliage loose. This is the tree which graces the landscapes of Salvator Rosa, who painted in the mountains of Calabria, where it flourishes.

The Chestnut has long been naturalized to the southern countries of Europe. It is said that Tiberius Cæsar first brought it from Sardis in Lydia to Italy, whence it was propagated into France, and so among us^d. It is indigenous in many parts of Asia, in China, Cochinchina, Japan, &c.

The Chestnut abounds now in the mountainous parts of Italy, in the South of France, in Switzerland, in the Valais, and many parts of the Alps towards Italy, in Corsica and Sicily, where it grows half way up mount Etna; also in Carniola, some parts of Germany, &c.]

With us in England, says Miller, it was formerly in greater plenty than at present, as may be proved by the old buildings in London, which were for the most part of this timber; and there are remains of old decayed Chestnuts in the woods and chaces not far distant from London, particularly Enfield chace. [I doubt very much, however, whether the timber supposed by Mr. Miller, and by architects in general to be Chestnut in our old buildings, be any thing more than Oak of a different grain, and inferior quality.

Mr. Evelyn makes little doubt but that the Chestnut is a free-born of this island. Dr. Ducarel is of the same opinion, and among the ancient records to which he appeals, produces a deed of gift from Henry II. to Flexley abbey, of the tithe of all his Chestnuts in the forest of Dean. The Hon. Daines Barrington on the contrary (*Philos. trans. vol. 61.*) thinks that it is not a native. It certainly is not in the woods north of Trent, and though it has been long in the southern parts, yet there is no appearance of its being indigenous^e.

This tree seems to be very long lived, and grows

to a very great size. The famous *Castagno dé Cento Cavalli* on mount Etna, as measured by Mr. Brydone in 1770, is 204 feet in circumference; some, however, have doubted whether this be really one tree. Brydone says, it had the appearance of five distinct trees, but that he was assured the space was once filled with solid timber, and that there was no bark on the inside. Kircher, about a century before Brydone, affirms that an entire flock of sheep might be commodiously inclosed within it, as in a fold. *Il Castagno del Galea*, of which there is no doubt, measured then seventy-six feet round, at two feet from the ground. But these trees grow on a deep rich soil, formed from the ashes of the volcano.

There are some fine Chestnuts on the banks of the river Tamer in Cornwall, at an old house belonging to the Edgcombe family: and at Beechworth castle in Surrey there are not fewer than seventy or eighty trees measuring from twelve to eighteen or twenty feet in girt.

At Wimley near Hitchin Priory in Hertfordshire, a Chestnut in 1789 girted somewhat more than fourteen yards at five feet above the ground; its trunk was hollow, and in part open, but its vegetation was vigorous^f.

In the park adjoining to the garden at Great Canford in Dorsetshire are four large Chestnut trees, one of them measuring thirty-seven feet round, still bearing fruit plentifully, though much shivered and decayed by age^g.

There was an old decayed tree at Fraiting in Essex, whose very stump yielded thirty sizeable loads of logs. And another in Gloucestershire containing within its bowels a pretty wainscotted room, enlightened with windows, and furnished with seats, &c^h. Ben Jonson, in his poem on Penshurst, makes mention of a Chestnut planted at the birth of Sir Philip Sidney.

In Ireland there are or have been many fine Chestnuts; as an avenue at Dunganstown, the estate of William Hoey, Esq., cut down in 1793; one of these measured fourteen feet three inches, another fifteen feet, and a third sixteen feet six inches round; the length of one was twenty-four feet, and another thirty-six.

The most remarkable of these trees in England is that at Tortworth, the seat of Lord Ducie in Gloucestershire. Even in the year 1150, says Bradley, it was stiled the great or old Chestnut tree of Tortworth; it fixes the boundary of the manor, and is probably 1000 years old at least. It girted fifty-one feet at six feet above the ground, about the year 1720: it divided at the crown into three limbs, one of which then measured twenty-eight feet and a half in girt, five feet above the crown. The soil in which the tree grows is a soft clay somewhat loamy, and the situation on the N. W. side of a hillⁱ.

Lord Ducie has a beautiful painting of this ancient tree. I have, by the favour of his Lordship, an etching of it, made in the year 1772, under which is this inscription—"The east view of the ancient Chestnut tree at Tortworth, in the County of Gloucester, which measures nineteen yards in circumference, and is mentioned by Sir Robert Atkyns in his history of that County, as a famous tree in King John's time, and by Mr. Evelyn in his *Sylva*, to have been so remarkable for its magnitude, in the reign of King Stephen, as then to be called the great Chestnut of Tortworth, from which it may reasonably be presumed to have been standing before the conquest."—When this etching was made, it was barely included within the garden wall, which bore hard upon it; but the present Lord Ducie removed the incumbrance, and at the same time applied fresh earth to the roots, which seems to have enlivened it. So late as the year 1788 it produced great quantities of fruit, which though small, were sweet and well flavoured.

^f Gilpin's for. scen. 1. 59. & 141.^g Grose's antiquities, suppl. vol. 1.^h M. S. Ord.ⁱ Philos. account, p. 176. also Gent. mag. for 1766. p. 321. where is a figure of it.^a Woodw. Mfs.^b Ray.^c Haller, Scopoli, Ray.^d Evelyn.^e Evelyn's *silva* by Hunter.

Mr. Lysons also has etched two views of this famous tree, from the S.W. and the N.W. He says that in 1791 it measured forty-four feet four inches round in the thickest part, which is much less than the dimension given by Bradley, and yet this is exceeded by that of Sir Robert Atkyns, who gives it nineteen yards. Sir Robert is of opinion that it was originally several trees; and Mr. Marshall thinks it to be two trees grown together. Sir Robert Atkyns mentions the tradition of its having been growing in the reign of King John; and Mr. Peter Collinson relying on the accounts of Evelyn and Bradley, supposed it to have been planted in the reign of King Egbert. But Mr. Lysons says, that there does not seem to be any authority to show at what period it became remarkable for its size, except a very vague tradition; and it could never have been a boundary of the manor, for it stands in the centre of it.]

The Chestnut is a tree which deserves our care as much as any of the trees which are propagated in this country, either for use or beauty; being one of the best sorts of timber, and affording a goodly shade. The leaves continue late in the autumn, turning then to a golden colour; nor are they so liable to be eaten by insects as are those of the Oak, which of late years have frequently happened to the latter, and has rendered them very unsightly great part of summer, which I have never observed to be the case with the Chestnut, which renders them more valuable for parks and plantations for ornament; and there is no better food for deer, and many other animals, than their nuts, which most of them prefer to acorns; but yet there should not be many of these trees planted too near the habitation; because, when they are in flower, they emit a very disagreeable odour, which is very offensive to most people.

[The shade also of the Chestnut, like that of the Ash, is injurious to other plants; it should therefore be planted in thickets, or in detached plantations^k. Or if these trees be planted in large wilderness quarters next the walks, or in woods by the side of the ridings; and left untrimmed as they ought to be, they will feather to the bottom, and hide the naked and crooked stems of other trees^l.

To recommend the restoration of this noble and useful tree, which has unaccountably been in a manner lost among us, we must observe, that it] may be cultivated in England so as to afford an equal profit without any other sort of timber tree; since the wood is equal in value to the best Oak, and for many purposes far exceeding it, particularly for casks, for which it is much used in Italy; and for pipes to convey water under ground. In Italy it is planted as coppice-wood, to make stakes for their vines, which will continue seven years.

[It must therefore be very proper for stakes in espaliers and dead hedges, for hop-poles, hurdles, &c. It was formerly used for all the same purposes as Oak, in building, mill-work, and household furniture. And lately some of it that was finely variegated has been successfully employed in doors and ballustrades of a stair-case; a colour being given them, by rubbing them over with alum water, then laying on with a brush a decoction of logwood chips, and, lastly a decoction of Brazil wood; they have been frequently taken for mahogany.

Some persons assert that the timber of Chestnut is brittle, and decays at heart; whilst, according to others, it will last longer than Oak, is not subject to cracks or flaws, and is never attacked by spiders or other insects. Old Chestnut is very brittle, and apt to crack, and therefore should never stand longer than whilst it is in a growing state. If cut when it squares only six inches, it will be as durable as Oak of six times its size and age; having very little sap in proportion to other trees. The durability of it when exposed to the weather is sufficiently ascertained, from its use for gate-posts at Welling-

ton in Somersetshire, of which the following is an account.—In or about the year 1763, some gate-posts of Oak, and others of Chestnut were to be repaired; they had the appearance of being put in at the same time, but the latter were much more found, inasmuch that some of them were adjudged good enough to remain as gate-posts, and are now to be seen there (1788). Such as were too small were taken up, and set as posts to fix rails to. At the same time some new posts of Oak were put in, there not being enough of the old Chestnut posts. Though these were old when put in, twenty-five years ago, they are now (1788) more found than the Oak posts which were then new. One side of the Chestnut posts was the outside of the tree, but the timber is as found there as in any other part; which would not have been the case with Oak, the sap of which, next the bark, soon decays. The Chestnut gate-posts had been put down many years before 1745; they have therefore probably stood the weather above half a century^m.

Another account says, that the branch of a Chestnut about thirteen inches square, which in the year 1726 was put down as a hanging post for a gate, and carried the gate fifty-two years, when taken up appeared perfectly found, and was put down for a clapping-post in another place.

In 1743 a large barn was built with some of this timber, and is now (1792) found in every part. About the same time several posts and rails were put down, which after standing thirty or forty years, generally appeared so found, as to admit of being set up in some other place.

In 1772 a fence was made of posts and rails converted from young Oaks and Chestnuts of the same age and scantling. In 1791 this fence was removed, when the Chestnut posts were found as found as when they were first put down; but those of Oak were so much wasted just below the surface of the ground, that they could not be used again without a spurⁿ.

The nuts are the usual; and in some places almost the only food of the common people in the Apennine mountains of Italy, in Savoy, and some parts of the South of France; not only boiled and roasted, but also in puddings, cakes and bread. They are esteemed to be a very flatulent diet, and hard of digestion; yet there are instances in Italy of men's living to ninety or a hundred years of age, who have fed wholly on Chestnuts. They are brought even to fashionable tables in deserts. Mr. Ray mentions that they are eaten in Italy with orange or lemon juice and sugar; and that they are commonly sold there about the streets, roasted on a portable furnace; whence we may conclude that this luxury was unknown at London in the last century. These nuts are used for whitening linen cloth, and for making starch; they are reputed excellent for feeding hogs. The leaves also make useful litter, and mixed with the dung of the cattle are a good manure^o.

The foregoing account will, I hope, have some tendency to encourage the growth of this noble though neglected tree. Mr. Peter Collinson, who made no doubt of its being a native, assigned the great profit arising from Chestnuts when cut for hop-poles as the reason why it is so rare to see large trees in the woods^p. Let us hope, however, to see it rear its head again as a timber tree among us. An arret of the council at Paris was published in May 1720, ordering that all the great roads in France should be planted with Chestnut or other such fruit or forest-trees as are suitable to the nature of the ground, at thirty feet distance from each other, and within six feet of the top of the ditch^q.

The principal plantations which have been made of late years in Great-Britain are in the northern parts of the island. The Earl of Fife has planted

^m Transact. soc. arts for 1789. p. 10, &c.

ⁿ Ibid. for 1792. p. 30.

^p Gent. magaz.

^o Boucher.

^q M.S. Ord.

^k Boucher.

^l Evelyn's silva by Hunter.

above 60,000 trees in the county of Murray. George Ross, Esq. 4000 in Cromarty. In England Mr. Windham's plantations at Felbrigg in Norfolk, made in 1676, are well known. Mr. Joseph Mace has planted six acres seventeen perches, with above 3000 trees, at Ashford in Biddenden, Kent. John Sneyd, Esq. 8000 at Belmont in Staffordshire from 1784 to 1786. Mr. Joseph Cowlshaw six acres in Carlton forest, with above 1800 of these trees, mixed with Larch, Ash, &c. &c.*]

Varieties.

There are several varieties of the Chestnut, which have accidentally arisen from seeds; but the difference is chiefly in the size of the fruit and leaves. There is, however, one with variegated leaves which is propagated in the nurseries as a curiosity.

[The striped Chestnut is among the most beautiful of the variegated trees, the blotches being of a rich shining gold colour, strongly marked*.

The dwarf branching Chestnut is no more than a variety of the common sort.]

2. The Chinquapine or dwarf Virginian Chestnut seldom grows above twelve or fourteen feet high, but produces great plenty of nuts, which are, for the most part, single in each capsule. This tree is very hardy, and will resist the severest of our winters in the open ground, but is very apt to decay in summer, especially in a dry soil. But although it delights in moisture, yet if the wet continues long upon the ground in winter, it frequently destroys the trees. It is very common in the woods of America, but is rare in England, [though it was cultivated so long since as 1699, by the Dutchess of Beaufort†.

3. The BEECH had its latin name *Fagus* from the Greek φαγος, which in the Doric dialect is put for φηγος, from φηγω, to eat, either because mankind lived on beech-mast before the use of corn, or because it was the food of the common people*. We are not to suppose that the *Fagus* of the Romans is the same with the φαγος of the Greeks, which is a species of oak*. It is, however, imagined by some that the *Fagus* of Cæsar, Virgil and Vitruvius is a species of Oak, and not the Beech†. Our Beech is the Οξυς of the Greeks, and Belon informs us that it is still called by that name on mount Athos.

The appellation is the same in all the northern languages, and in all the dialects of the Slavonian. In German, *Buche*, *Buke*, or *Boke*; in Danish, *Bog*; in Swedish, *Bok*; in Russian, Polish, &c. *Buk*. The French *Hêtre* is from the German *Hester*, which signifies a young Beech. In Italian it is *Faggio*, from the Latin. In Portuguese this is softened into *Faya*; and in Spanish into *Haya*; but in some provinces it is *Fagos*.

This tree will grow to a very large size, lofty and spreading, the trunk straight, and covered with a whitish bark. The leaves are smooth and glossy, waved on the edges rather than serrate, or slightly sinuate-toothed, three inches and more in length, and two or upwards in breadth: the petioles reddish, slightly grooved above, four or five lines in length, pubescent, as is also the midrib of the leaf. Stipules reddish-brown, shining, lanceolate, conspicuous. It retains the old leaves through the winter. The male catkins come out in bunches from the ends of the small branches; they are roundish, obtuse, half an inch long, and almost as broad; on peduncles from half an inch to fourteen lines in length, pendulous, round, and pubescent. Calyx cut half way into six sharp, villose, yellowish segments. Stamens uncertain (4, 6, 8, 9, 11, 12.), from the bottom of the calyx. The female aments come out from the same place, a little above the others; they are erect, and on round, whitish, villose peduncles, four lines or upwards in length: the common involucre has two flowers, is four-cleft, and covered with soft spines; calyx superior, six-leaved, tomentose: germ three-celled, with two rudiments of seeds in each

cell; styles three (or one three-cleft. G.); stigmas awl-shaped, and slightly hooked, yellowish and smooth; at the top of the germ there are also six whitish villose segments, shorter than the styles. The fruit is composed of two nuts joined at the base, covered with an almost globular four-valved involucre, with soft spines on the outside, but within very smooth and silky: the nuts when ripe are one-celled and triangular; and contain one or two angular seeds‡.

The Beech is native of the greater part of Europe, and the southern provinces of the vast Russian empire; but it is not fond of very high or cold situations, nor is it found in the northern provinces of Sweden. Mr. Lightfoot doubts whether it be indigenous in Scotland; and Mr. Marshall thinks it is not a native of the northern counties in England; it prospers in a chalky and rocky soil, but not in light lands. It thrives prodigiously in sheltered bottoms, and of all exposures most dislikes the west. In some parts of Hertfordshire, where the soil is a strong clay full of flints, this tree grows to a great size, and is extremely beautiful.

Mr. Arthur Young (Travels in France, p. 7.) speaks of a Beech at Chantilly, as the finest he ever saw; straight as an arrow, and not less than eighty or ninety feet high; forty feet to the first branch, and four yards in diameter at five feet from the ground.

In Ireland several fine Beeches are mentioned, though it is not supposed to be a native of the island. As at Tiny-Park, the seat of Sir Skeffington Smyth, Bart. three noble trees together, the smallest fourteen feet round, the next fifteen feet six inches at the butt, and fourteen feet eight inches at seven feet from the ground, the third is sixteen feet three inches round, and continues nearly of the same girth for thirty-six feet.

Cæsar's assertion that the *Fagus* was not in Britain when he visited the island, can hardly be got over but by supposing that his *Fagus* is not the Beech.

Beech, says the late Mr. White, is one of the most grand and lovely of all the forest trees, whether we consider its stately trunk, its smooth silvery rind, its glossy foliage, or graceful spreading pendulous boughs. No tree, says another, is more beautiful when standing singly in parks or ornamental grounds, as it throws out its branches very regularly, and feathers almost to the ground. In woods or groves it grows clear of branches to a great height*.

Mr. Gilpin is not inclined to rank the Beech much higher in picturesque beauty than in utility. Its trunk, he allows, is often highly picturesque, being studded with bold knobs and projections, and having sometimes a sort of irregular fluting, which is very characteristic. The bark, too, wears often a pleasant hue; it is naturally of a dingy olive, but is overspread, in patches, with a variety of mosses and lichens: its smoothness also contrasts agreeably with these rougher appendages. This is all the merit Mr. Gilpin allows to the Beech: for we rarely see it well ramified; and in full leaf it has the appearance of an overgrown bush. Virgil, indeed, was right in choosing the Beech for its shade, for no tree forms so complete a roof, but its bushiness gives it a great heaviness. The Beech is most pleasing in its juvenile state. A light airy young tree, with its spiry branches hanging in easy forms, is often beautiful. Some of the finest oppositions of tint in the autumn arise from the union of this tree with the oak‡.]

The Beech is very well adapted to form lofty hedges, to surround plantations or large wilderness quarters, or for screens where there is not room for trees to extend their branches naturally. Although the timber of this tree is not so valuable as that of many others, yet as it grows very fast in chalky or stony ground of little value, with

* Transact. soc. arts.

† Vossius.

‡ Boutcher.

§ Gent. magaz. vol. 54. 656.

¶ Hort. kew.

• Pollich, Haller, Gärtner.

• Woodw. in With.

• Forest scenery, 43, &c.

a clear smooth bark, and straight trunk; as it will thrive on such soils and in such situations as better trees will scarcely grow in; and as it will resist winds on the declivities of hills better than most other trees; the planting of it should be encouraged, especially as it affords an agreeable shade, and the leaves both make a fine appearance in summer, and continue green as long in autumn as any of the deciduous trees; when they turn brown or orange, and frequently hold on all the winter. In parks, therefore, and other plantations for pleasure, this tree deserves to be cultivated among those of the first class, especially where the soil is adapted to it.

[But though the wood of the Beech be brittle, and decays soon in the air, yet it will endure long under water, and serves for a great variety of uses, as will appear from the following account. It is of great use to turners for making trenchers, dishes, trays, buckets, &c.; to the joiner for stools, bedsteads, and other furniture; to the wheeler and millwright. It makes shovels and spade-grafts for the husbandman, and is useful to the bellows-maker. Floats for fisher's nets, instead of corks, are made of its bark. It is good for fuel, billet, bavin and coals, though one of the least lasting; and its very shavings are good for fining of wine. If the timber lie altogether under water, 'tis little inferior to Elm. Baskets for strawberries, &c. are made of the bark. Of the thin lamina or scale of the wood, scabbards for swords, band-boxes, hat-cases, &c. The leaves are used abroad, on account of their elastic quality, instead of straw for the *paillasse* to lay under their mattresses.—To this enumeration of uses by Mr. Evelyn, we may add many others.—It is now in much use among the cabinet-makers for chairs, both plain and painted, for bedsteads, with the posts frequently stained the colour of mahogany. It is used in the country for rafters in building. Much of it is cut out into quarters and planks for various purposes; and barn-floors are frequently laid with it. The mill-wright uses it for cogs, &c. and the wheelwright for spokes and fellies. It goes to the dockyards for wedges, and may be used in ship's bottoms from the keel to the floor-heads; and to the coal-mines under the name of Newcastle railing. Being of an even grain, and without knots, it makes beautiful benches and railing for public rooms, and many sorts of inside work in houses. It is formed into gun-stocks, tool-handles, mallets, carpenters planes, &c. heel-pieces, and pegs for heels, and is used for the sounding boards of harpsichords, &c. by the musical-instrument makers. It is cut into pipe-staves for dry goods, especially by the soap-cask coopers, for whose use a considerable quantity is imported in ballast from Bremen and Dantzick, in slabs and clapboards about five feet in length. It is said that these coopers consume from twenty to thirty thousand of these clapboards yearly, except in time of war, when the importation is stopped. It is excellent fuel, and in burning affords a large quantity of pot-ash. Much of it is sent to the Metropolis under the name of London billet, for the use of the bakers, glasshouses, &c. The stackwood, which is made up of the branches, is burnt chiefly into charcoal. The nuts, or mast, as they are commonly called, fatten swine, but the fat is not firm; and they are greedily devoured by mice, squirrels and birds; they are said to occasion giddiness and head-ach; but when dried and powdered to make wholesome bread: roasted, they are sometimes substituted for coffee: the poor people in Silesia use the expressed oil instead of butter. At the beginning of this century Aaron Hill had a project for paying off the national debt with the oil of Beech-nuts! But they seem to yield little oil in northern countries; in Sweden, Linneus informs us, scarcely any can be expressed from them.

If the soil be tolerably good, Beech will become fit to be felled in twenty-five years. The woods are then drawn, as it is called; that is, the trees fit for fire-wood or billet, poles, timber, &c. are taken down, and no crooked trees are suffered to remain.

Formerly it was the custom to leave the old stools to produce new trees, but as these seldom grow well and handsome, now during the winter the old stools are grubbed up, and the plants which spring spontaneously from the mast are encouraged to supply the places of the trees which are taken down. Once in six or seven years this operation of drawing the woods may be repeated; and thus there is a constant and regular succession of trees fit to cut. The price which fire-wood or billet fetches in Buckinghamshire is near 4d. the foot solid measure. The poles and better stuff for gun-stocks, wedges, &c. sell for 5d. the foot. The largest trees for Mill-wrights, &c. sell at 6d. or 7d. the foot. Stackwood is 15s. or 16s. the load: and faggots 15s. or 16s. the hundred.

Whatever may have been the case with respect to our island in Cæsar's time, the Beech is now no uncommon tree in many considerable tracts of it, particularly on that great ridge of chalk hills which runs from Dorsetshire, through Wiltshire, Hampshire, Surrey, Sussex and Kent, branching out into Berkshire, Buckinghamshire, and Hertfordshire. On the declivities of the Cotswold and Stroudwater hills of Gloucestershire, and on the bleak banks of the Wye, in the counties of Hereford and Monmouth. It is indeed to be found in almost every county of England.

Some plantations of it have been lately made by the Earl of Fife, in the county of Murray, where his Lordship has planted near two hundred thousand of these trees. George Ross, Esq. has also set 13,000 of them in Cromarty. In England, John Sneyd, Esq. has planted above 14,000 at Belmont in Staffordshire between the years 1784 and 1786. And the Bishop of Llandaff 2000 at Ambleside in the year 1788.]

Varieties.

There are some planters who suppose that there are two species of this tree, the Mountain Beech, and the wild Beech; the first of which has a whiter wood than the second; but this difference arises only from the soil. There are also seeds of a Beech brought from North America by the name of broad-leaved Beech; but the plants raised from them proved to be the common sort.

[There are two varieties in the nurseries, one with yellow, and the other with white stripes. In Germany they have another variety with dark red leaves, which is called the *Purple Beech*. There are also some trees in our woods with a rougher bark, which the woodmen call *Hay Beech*.

4. Native of North America, and introduced in 1766 by Messrs. Kennedy and Lee^c.

5. This is a small tree about five feet high, with branches ascending a little. Leaves obscurely serrate, smooth, petioled. Male flowers in terminating aments, with a five-cleft calyx and corolla, and twelve stamens. Female flowers below on the same branch, with a five-cleft calyx, and no corolla. Capsule muricated, three-celled, three-valved, one-seeded. The seeds are of the same form and colour with the common sort, but very small. The corolla of the male flowers, being very thin and membranaceous, may be considered as a nectary. It is doubtful whether this be specifically different from the common Beech. Native of Cochinchina^d.]

PROPAGATION AND CULTURE.

CHESTNUT.

This tree is propagated by planting the nuts in february, in beds of fresh undunged earth. The best nuts for sowing, are such as are brought from Portugal and Spain, and are commonly sold in winter for eating, provided they are not kiln-dried, which is generally the case of most of those brought from abroad; which is done to prevent their sprouting or shooting in their passage; therefore, if they cannot be procured fresh from the tree, it will be much better to use those of the growth of England, which are full as good to sow for timber or beauty

^c Hort. kew.

^d Loureiro.

as any of the foreign nuts, though their fruit is much smaller: these should be preserved until the season for sowing, which is the beginning of march, in sand, where mice or other vermin cannot come to them, otherwise they will soon destroy them: before you set them, it will be proper to put them into water to try their goodness, which is known by their weight; those that swim upon the surface of the water should be rejected as good for nothing; but such as sink to the bottom, you may be sure are good.

In setting these seeds or nuts, the best way is, to make a drill with a hoe, as is commonly practised in setting Kidney Beans, about four inches deep, in which you should place the nuts, at about four or six inches distance, with their eye uppermost; then draw the earth over them with a rake, and make a second drill at about a foot distance from the former, proceeding as before, allowing three or four rows in a bed, with an alley between, three feet broad, for a convenience of clearing the beds, &c. When you have finished your plantation, you must be careful that it is not destroyed by mice, or other vermin; which is very often the case, if they are not prevented by traps, or other means.

In april these nuts will appear above ground; you must therefore observe to keep them clear from weeds, especially while young: in these beds they may remain for two years, when you should remove them into a nursery, at a wider distance. The best season for transplanting these trees, is either in october or at the end of february; but october is the best season: the distance these should have in the nursery, is three feet row from row, and one foot or eighteen inches in the rows: you must be careful in transplanting these trees, to take them up without injuring their roots, nor should they remain long out of the ground; but if they have a downright tap-root, it should be cut off, especially if they are intended to be removed again; this will occasion their putting out lateral roots, and render them less subject to miscarry when they are removed for good.

The time generally allowed them in this nursery, is three or four years, according to their growth; but the younger they are transplanted, if designed for timber, the better they will succeed; during which time you should be careful to keep them clear from weeds, observing also to prune off lateral branches, which would retard their upright growth; and where you find any that are disposed to grow crooked, either by their upper bud being hurt, or from any other accident, you may the year after planting, in march, cut them down to the lowermost eye next the surface of the ground, which will cause them to make one strong upright shoot, and may be afterwards trained into good straight trees: but this should not be practised, unless the plants have absolutely lost their leading shoot; for although the stems of the trees should be very crooked, as is generally the case with them when young, yet when they are transplanted out, and have room to grow, as they increase in bulk, they will grow more upright, and their stems will become straight, as I have frequently observed where there have been great plantations made of them.

But in doing this, you must be careful not to disturb or break their roots, which, perhaps, might destroy them. These trees require no other manure than their own leaves, which should be suffered to rot upon the ground; and in the spring of the year, the ground should have a slight digging, when these should be buried between their roots, but not too close to the trees, which might be injurious to their young fibres.

After having remained three or four years in the nursery, they will be fit for transplanting, either in rows to grow for timber, or in quarters for wilderness plantations, avenues, clumps, or the orchard; but if you intend them for timber, it is by much the better method to sow them in furrows, as is practised for Oaks, &c. and let them remain unremoved;

for these trees are apt to have a downright tap-root, which, being hurt by transplanting, is often a check to their upright growth, and causes them to shoot out into lateral branches, as is the case with the Oak, Walnut, &c.

But where the fruit of them is more sought after, then it is certainly the better way to transplant them; for as transplanting is a check to the luxuriant growth of trees, so it is a promoter of their fructification, as may be evinced by observing low shrubby Oaks, Walnuts, &c. which generally have a greater plenty of fruit than any of the larger and more vigorous trees; and the fruit of such trees is much superior in taste, though the seeds of vigorous trees are vastly preferable for plantations of timber; for it is a constant observation, that, by saving seeds from dwarf trees or plants, from time to time, they may be rendered much lower in their growth than is their natural size; but where the fruit is most desired, then they should be taken from such trees as produce the largest and sweetest nuts, which are commonly found upon such trees as spread the most, and have horizontal roots; for the weaker trees being less capable to furnish a supply of nourishment, and having a greater quantity of fruit upon them, to which this must be distributed, together with their roots lying near the surface of the ground, by which means the juices are better prepared by sun, air, &c. before it enters their vessels, it is certain their juices are better digested, and their fruits better matured, than those can possibly be which grow upon strong vigorous trees, which have long tap-roots running several feet deep into the earth, and consequently take in vast quantities of crude unprepared juice, which is buoyed up to the extreme parts of the tree; and these seldom having many lateral branches to digest and prepare their juice, by perspiring and throwing off the crude part before it enters the fruits.

And this, I dare say, universally holds good in all sorts of fruit trees, and is often the occasion of the good and bad qualities of the same sorts of fruits growing on the same soil.

What has been related about grafting this tree into the Walnut, to promote its bearing, or render the fruit fairer; or inoculating Cherries into the Chestnut, for later fruit, is very whimsical and silly, since neither the Chestnut nor Walnut will receive its own kind any other way than by inoculating or inarching; and it is the latter only by which the Walnut can be propagated; nor was it ever known, that any two trees of a different genus would take upon each other so as to produce either a good tree or fruit: therefore we may justly explode all those different graftings of various trees upon each other, so much talked of by the ancients; at least we may suppose those trees are not known by the same names now that they are mentioned by in their writings; for I have made many trials upon them, which, although performed with great care, and in different seasons, yet scarcely one of them succeeded. But to return:

If you design a large plantation of these trees for timber, after having two or three times ploughed the ground, the better to destroy the roots of weeds, you should make your furrows about six feet distance from each other, in which you should lay the nuts about ten inches apart, covering them with earth about three inches deep; and when they come up, you must carefully clear them from weeds: the distance allowed between each row is for the use of the horse-hoeing plough, which will dispatch a great deal of this work in a short time; but it should be performed with great care, so as not to injure the young plants; therefore the middle of the spaces only should be cleaned with this instrument, and a hand-hoe must be used to clean between the plants in the rows, and also on each side, where it will be unsafe for the plough to be drawn: and in hand-hoeing there must be great care taken not to cut the tender rind of the plants. If the following spring the spaces are carefully stirred with the plough,

plough, it will not only make the ground clean, but also loosen it, so as that the sun and moisture may more easily penetrate the same, which will greatly promote the growth of the plants; and the oftener these ploughings are repeated, the cleaner will be the ground, and the greater will be the progress of the plants, which cannot be kept too clean while they are young. When these have remained three or four years, (if the nuts succeed well) you will have many of these trees to remove, which should be done at the seasons before directed, leaving the trees about three feet distance in the rows; at which distance they may remain for three or four years more, when you should remove every other tree to make room for the remaining, which will reduce the whole plantation to six feet square, which will be distance enough for them to remain in until they are large enough for poles, when you may cut down every other of these trees, making choice of the least promising, within a foot of the ground, in order to make stools for poles, which in eight or ten years time will be strong enough to lop for hoops, hop-poles, &c. for which purposes they are preferable to most other trees; so that every tenth year here will be a fresh crop, which will pay the rent of the ground, and all other incumbent charges, and, at the same time, a full crop of growing timber left upon the ground: but as the large trees increase in bulk, their distance of twelve feet square will be too small; therefore when they have grown to a size for small boards, you should fell every other tree, which will reduce them to twenty-four feet square, which is a proper distance for them to remain for good; this will give air to the underwood, which, by this time, would be too much overhung by the closeness of the large trees; by which means that will be greatly encouraged, and the small timber felled will pay sufficient interest for the money at first laid out in planting, &c. with the principal also: so that all the remaining trees are clear profit, for the underwood still continuing, will pay the rent of the ground, and all other expences; and what a fine estate here will be for a succeeding generation, in about fourscore years, I leave every one to judge.

[In making a plantation of Chestnut trees for the fruit, the ground should have three or four ploughings the preceding summer and winter; and if one good digging is added a little before planting, it will be a great improvement. Plant your trees in rows six feet distant every way, dig the ground annually, and when the branches begin to meet, take up every second row, and every second plant, which will leave all the trees at twelve feet distance, and the wood of the trees taken up will be very useful for many purposes. Having dug, or half trenched the land, if it is of a good quality, it may for some years be cultivated with potatoes, cabbages, turneps, &c. When the branches begin again to meet, they must be reduced as before, and left twenty-four feet asunder; at which distance they may remain. The wood of this last felling will saw into small boards, and being about twenty years old, must be rooted out, for the Chestnut shoots vigorously from stools. The remaining trees having produced fruit for several years, will now bear vast quantities, and make great returns of profit.

In raising Chestnut woods for timber, Mr. Boutcher advises for the first two years to take a line of beans between the drills: and at the end of two years, early in the spring, to remove every second plant in the rows, which will leave them about two and a half feet asunder, and at this distance let them remain three years. Then remove every second row, and every second tree in the remaining rows, which will leave them at the distance of eight feet by five. These plants will be useful for stakes and poles. The ground may now be levelled and dug for any kitchen-garden crops. In february following cut them down, reserving only the straightest and most vigorous, at the distance of twenty-five or thirty feet. Dwarf crops may be taken between the rows

for two years more, after which the trees will soon cover the ground.

Both he and Dr. Hunter prefer february to october for transplanting. Mr. Marshall advises the nuts to be set by the dibble, six inches asunder, in a quincunx order; because drills serve as conductors to the field mouse.

Mr. Hanbury contends for planting a Chestnut wood from the nursery. He advises to plant out the trees when they are five feet high, because they will not be so large as to require staking, nor so small as to be within the reach of hares, rabbits, &c. The distance to be two yards, which is far enough asunder for poles: when they are big enough for this use, they should be cut down, leaving a sufficient number of the most thriving trees for timber: this will be in fourteen years: if they are cut within a foot of the ground, there will be stools for another crop in ten years more. If the plantation is large, the first fall of poles may be begun so early, and the latter deferred so late, that the year after the last fall the stools of the first cut poles shall have sent forth others ready for a second cutting. Thus the proprietor will enjoy the benefit of an annual sale, and the country not be glutted with too great a quantity.

Mr. Hanbury prefers this method, because when the tree is raised from the nuts, it is subject to a tap-root which strikes beyond the reach of nourishment, and consequently it grows slower; and because while they are in the nursery, a vast quantity will stand in a small space; whereas when they are raised from the nuts, the whole wood must be kept clear of weeds till the plants are grown of a sufficient size to defend themselves.

The Chestnut will thrive on almost all soils, and in all situations, if there be no standing water; but best in a rich loamy land; it will succeed, however, very well on gravel, clay or sand. All mixed soils suit it, as well as exposed places, and the declivities of hills.]

In foreign countries, where the Chestnut is cultivated for the fruit, they graft cyons from trees bearing the largest and fairest fruit, upon stocks raised from the nut. These grafted trees are by the French called Marroniers, and are unfit for timber.

The varieties with striped or blotched leaves are maintained by budding, and inarching upon common Chestnut stocks.

2. The nuts of the Chinquapine or dwarf Virginian Chestnut, should be put up in sand, in America, as soon as they are ripe, and sent out immediately, otherwise they lose their vegetating quality. When the nuts arrive, they should be put into the ground as soon as possible, and if the winter should prove severe, cover the ground with leaves, tan or peas-haulm, to prevent the frost from penetrating to the nuts.

BEECH.

The Beech-tree is propagated by sowing the mast, the season for which is any time from october to february; only observing to secure the seeds from vermin when early sowed: if this be carefully done, the sooner they are sown the better, after they are full ripe. [Since Beech-mast, however, keeps very well, and it is greatly relished by Field-Mice and other vermin, many planters prefer spring-sowing; in which case the seeds should be spread on a mat, in an airy place for a few days to dry, and then put up in bags.]

A small spot of ground will be sufficient for raising a great number of these trees from seed. They must be kept clean from weeds; and if they come up very thick, drawing the strongest the autumn following: and thus if a seed-bed be husbanded carefully, it will afford a three year's draught of young plants, which should be planted in a nursery; and, if designed for timber trees, at three feet distance row from row, and eighteen inches asunder in the rows. But if they are designed for hedges, two feet row from row, and one foot in the rows will be sufficient. In this nursery they may remain two

at three years; observing to clear them from weeds, and to dig up the ground between the rows, at least once a year; but be careful not to cut or bruise the roots, and never to dig the ground in summer, when it is hot and dry.

The Beech will prosper on stony, barren soils; but then the nursery for the young plants ought to be upon the same soil: for if they be raised in a good soil and a warm exposure, and afterwards are transplanted into a bleak barren situation, they seldom thrive. See NURSERY.

For hedges, the Beech may be kept in a regular figure, if sheared twice a year, at least when it shoots strong: in which case, if the hedges are neglected but a season or two, it will be difficult to reduce them again.

The varieties with striped leaves may be continued by budding or grafting upon the common Beech: observing not to plant them in too good a soil, which will frequently cause the leaves to become plain.

[The above directions being in some respects imperfect, I have subjoined the following from Mr. Boutcher.

Being provided with mast from the straightest and freshest trees in september, as soon as the husks are quite dry, mix them with sand, and lay them under an old frame or other covering, to protect them from frost and wet. The beginning of march sow them in beds four feet wide, in shallow drills eighteen inches asunder; covering them one inch deep: if the season be dry, give them frequent but moderate waterings, from their appearance above ground till the middle of august. In march, next season, with a spade made very sharp, undermine the roots, and cut them over between four and five inches under ground. The following autumn or spring, either raise the whole, or give them another cutting underground, when gently raising such as are too thick, leave the remainder at proper distances, to stand another season. Plant such as you have raised, after smoothing the bruised and broken roots, and cutting away some of the small hairy fibres, in lines two feet asunder, and nine or ten inches in the line: here they may remain two, or if the land be poor, three years. Next autumn or spring, treat the rest in like manner. Trim off only cross ill-placed branches, and those sparingly. From this nursery they must be removed to another, and planted in rows three feet and a half asunder, and eighteen inches in the row: here they may remain three years; in poor land four; observing always to prune moderately at removal, and to leave abundance of small branches.

Now these plants will be fit for common and extensive plantations: but such as are designed for removal when large trees, must again be transplanted in rows five feet asunder, and two feet distance in the rows, to remain in good ground three, in poor four years. From this remove them again into rows eight feet asunder, and six feet in the row, to remain four years. If required of a still larger size, plant them ten feet asunder every way.

Mr. Young informs us, in his Irish tour, that Mr. Mahon made a plantation of all sorts of forest trees in his park, in order to see how far the deer would let them escape. They devoured every tree except the Beech, not one of which they touched, either leaf, branch, or bark. Many of his Beeches, not more than thirty years growth, were three or four feet in girth, and from thirty to forty feet high.

FAGUS. See *Carpinus* and *Tetracera*.

Fair Maids of Kent. See *Ranunculus*.

FALCARIA. See *Sium*.

FALCATA. See *Medicago*.

FALKIA. (So named by Thunberg in honour of Jo. Petr. Falck, Professor at Petersburg.)

Lin. gen. Schreb. n. 611. Thunb. nov. gen. 17.

Lin. suppl. 30. Juss. 132.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Campanaceæ*.—*Borragineæ*. Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, somewhat inflated, five-angled, shorter by half than the corolla, five-parted; angles widened in the middle, compressed, standing out; divisions ovate, acute.

COR. one-petalled, bell-shaped, crenate-ten-parted: border spreading.

STAM. *Filaments* five, filiform, inserted into the tube of the corolla, erect, unequal, shorter than the corolla. *Anthems* ovate, compressed.

PIST. *Germes* four, superior, smooth. *Styles* two, capillary, divaricate, the length of the corolla. *Stigmas* capitate, obtuse, simple, (orbiculate, peltate.)

PER. none.

SEEDS four, globular, arilled, at the bottom of the calyx.

OBS. *This genus is allied to Convolvulus; having the flower of the same structure, but differing in the seed.*

ESSENTIAL CHARACTER.

Cal. bell-shaped, five-cleft. Cor. bell-shaped. *Stigmas* orbicular peltate. *Seeds* four, arilled.

SPECIES.

1. *Falkia repens*. *Creeping Falkia*.

Lin. syst. 345. suppl. 211.

DESCRIPTION, &c.

Falkia resembles *Convolvulus* in the herb and structure of the flower; but it differs totally in the seed.—Native of the Cape of Good Hope; observed there by Thunberg*, and Masson. Introduced in 1774. It is perennial, and flowers from may to august†.

PROPAGATION AND CULTURE.

This is generally increased by parting the roots, planting in loamy earth, and watering freely in summer.

FAN PALM. See *Chamærops* and *Thrinax*.

FARFARA. See *Tussilago*.

FARSETIA. See *Cheiranthus*.

FEATHER, Prince's. See *Amaranthus*.

FEATHERED COLUMBINE. See *Thalictrum*.

FEATHER GRASS. See *Stipa*.

FELFEL TAUIL. See *Cynanchum*.

FELWORT. See *Gentiana*.

FEMALE FERN. See *Pteris*.]

FENCES. In hotter climates than England, where they have not occasion for walls to ripen their fruit, their gardens lie open, where they can have water fence and prospects; or else they bound their gardens with groves, in which are fountains, walks, &c. which are much more pleasing to the sight than a dead wall: but in colder countries, and in England, we are obliged to have walls to shelter and ripen our fruit, although they take away much from the pleasant prospect of the garden.

Since therefore we are under a necessity to have walls to secure our gardens from the injury of winds, as well as for the convenience of partitions or inclosures, and also to ripen our fruit, brick walls are accounted the warmest and best for this purpose: and these walls being built pannel-ways, with pillars at equal distances, will save a great deal of charge, because the walls may be built thinner, than if they were built plain without these pannels, for then it would be necessary to build them thicker every where: and besides, these pannels make the walls look the handsomer.

Stone walls are by some preferred to those of brick, especially those of square hewn stones; but where they are designed for fruit, they should be faced with brick. Those that are made of rough stones, though they are very dry and warm, yet, by reason of their unevenness, are inconvenient to nail up trees to, except pieces of timber be laid in them here and there to fasten a trellis to them.

But in large gardens it is better to have the prospect open to the pleasure-garden, which should be surrounded with a fosse, that from the garden the adjacent country may be viewed, but this must depend on the situation of the place; for if the prof-

* Linn. suppl.

† Hort. kew.

pect from the garden is not good, it had better be shut out from the sight by a wall, or any other fence, than to be open. As also, where a garden lies near a populous town, and the adjoining grounds are open to the inhabitants, if the garden is open, there will be no walking there in good weather, without being exposed to the view of all passengers, which is very disagreeable.

Where these fosses are made round a garden which is situated in a park, they are extremely proper; because hereby the prospect of the park will be obtained in the garden, which renders these gardens much more agreeable than those which are confined.

In the making these fosses there have been many inventions; but, upon the whole, I have not seen any which are in all respects preferable to those which have an upright wall next the garden; which (where the soil will admit of a deep trench) should be six or seven feet high, so as to be above the reach of boys; and from the foot of this wall, the ground on the outside should rise with a gradual easy slope to the distance of eighteen or twenty feet; and where it can be allowed, if it slopes much farther, it will be easier and less perceptible as a ditch to the eye, when viewed at a distance. But if the ground is naturally wet, so as not to admit of a deep fosse, then, in order to make a fence against cattle, if the wall be four feet high, and slight posts of three feet and a half high are placed just behind the wall, with a small chain carried on from post to post, no cattle or deer will ever attempt to jump against it, therefore it will be a secure fence against them; and if these are painted of a dark lead colour, they will not be discerned at a distance: and at the same time the chain will secure persons walking in the garden from tumbling over: and if another chain is carried through the posts at one foot from the ground, it will more effectually prevent cattle from creeping under.

In such places where there are no good prospects to be obtained from a garden, it is common to make the inclosure of park-paling; which, if well performed, will last many years, and has a much better appearance than a wall: and this pale may be hid from the sight within, by plantations of shrubs and Evergreens; or there may be a Quick hedge planted within the pale, which may be trained up, so as to be an excellent fence by the time the pales begin to decay.

There are some persons who make stockade fences round their gardens to keep out cattle, &c. which, when well made, will answer the purpose of a fence; but these being very expensive in the making, and not of very long duration, has occasioned their not being more commonly in use.

As to fences round parks, they are generally of paling; which, if well made of winter-fallen Oak, will last many years; but a principal thing to be observed in making these pales, is not to make them too heavy; for when they are so, their own weight will cause them to decay; therefore the pale should be cleft thin, and the rails should be cut triangular, to prevent the wet lodging upon them; and the posts should be good, and not placed too far asunder, burning that part of them which goes into the ground. If these things are observed, one of these pales will last, with a little care, upward of forty years very well. The common way of making these fences is, to have every other pale nine or ten inches above the intermediate ones; so that the fence may be six feet and a half high, which is enough for fallow deer; but where there are red deer, the fence should be one foot higher, otherwise they will leap over.

Some inclose their parks with brick walls; and in countries where stone is cheap, the walls are built with this material; some with, and others without mortar.

A kitchen-garden, if rightly contrived, will contain walling enough to afford a supply of such fruits as require the assistance of a wall for any family;

and this garden being situated on one side, and quite out of sight of the house, may be surrounded with walls, which will screen the kitchen-garden from the sight of persons in the pleasure-garden; and being locked up, the fruit will be much better preserved than it can be in the public garden: and the having too great a quantity of walling is often the occasion that so many scandalous trees are frequently to be seen in large gardens, where there is not due care observed in their management.

And besides, the borders of pleasure-gardens are generally too narrow for the roots of fruit-trees, as will be shewn in its proper place, therefore it is in vain to plant them there.

The height of garden-walls should be from ten to twelve feet, which is a moderate proportion; and if the soil be good, it may in time be well furnished with bearing wood in every part, especially those parts planted with Pears, notwithstanding the branches being trained horizontally from the bottom of the walls.

I would recommend the White Thorn, the Holly, the Black Thorn and Crab, for outward fences to a good ground, but I do not approve of the intermixing them.

The White Thorn is the best quick to plant, because it is the most common, and may be clipped so as to render it the closest and hardiest fence of any other tree; and being very durable, is preferred to all others for outward fences, or for the division of fields, where they are exposed to cattle, &c.

The Black Thorn and Crab make very good fences, and are to be raised as the White Thorn; but if the kernels of Apples or Crabs be sown, it is best to sow the pommace with them, and they will come up the sooner, *i. e.* the first year, if sown in the autumn, soon after the fruit is ripe.

If Crab-stocks be planted while young, in the same manner as quick, they make excellent hedges soon, and so will some sorts of Plums, I mean such as have thorns.

The Black Thorn is not accounted so good for fences as the White Thorn, because it is apt to run more into the ground, and is not certain as to the growing, especially if the plants are not set very young; but then on the other hand, the bushes are by much the better, and are also more lasting than the White Thorn, or any other, for dead hedges, or to mend gaps; nor are they subject to be cropt by cattle, as the others are. The richer the mould is, the better they will prosper, but yet they will grow on the same sort of soil that the White Thorn does.

The Holly will make an excellent fence, and is preferable to all the rest, but is a slow grower; but when once it does grow, it makes amends by its height, strength, and thickness.

It is raised of young seedling plants or berries, as the White Thorn is, and the berries will lie as long in the ground before they come up. It delights most in strong grounds, but will grow upon the driest gravel, amongst rocks and stones.

French Furze will also do well upon dry sandy banks, where few other plants will grow; but they must be kept very clean at the bottom, and cut thin, and never suffered to grow too high, nor should they be cut in dry weather, or late in autumn, nor early in the spring; the doing either of which is subject to make it die in patches, which is irrecoverable; nor will it ever break out again from old wood, if cut close in, after it has been suffered long to grow out.

Fences may likewise be made of Elder; if the soil be any thing good, you may put sticks of Elder, or truncheons ten or twelve feet long, slopeways in your banks, so as to make a chequer-work; and they will make a fence for a garden the quickest of any thing, and be a good shelter. But these fences are improper for a fine garden, because they shoot very irregular, and are ungovernable; as likewise the roots of these trees spread very far, and draw away all the heart of the ground, so as to starve
whatever

whatever plants grow near them: and add to this the scattering of the berries, which will fill the ground near them with young plants; which, if not timely weeded out, will get the better of whatever grows near them; therefore this sort of fence is seldom planted, where a hedge of White Thorn can be had.

Elder planted on a bank, the side of which is washed with a river or stream, will make an extraordinary fence, and will preserve the bank from being undermined by the water, because it is continually sending suckers from the roots and lower branches, which is of great advantage where the stream washes away the bank.

For middle fences in a garden, the Yew is the most tonfile, governable, and durable plant.

For surrounding wilderness quarters, Elm, Lime, Hornbeam and Beech, are very proper.

See more on this subject under HEDGES.

FENNEL. See *Anethum*.

FENNEL-FLOWER. See *Nigella*.

[———] GIANT. See *Ferula*.

———, Hog's. See *Peucedanum*.

FENUGREEK. See *Trigonella*.

FERN. See *Filix*.

——— Female. See *Pteris*.

——— Flowering. See *Osmunda*.

——— Male. See *Polypodium Filix mas*.

——— Mule. See *Hemionitis*.

——— Stone. See *Osmunda crispa*.]

——— Sweet. See *Scandix*.

FERRARIA. (In honour of John Bapt. Ferrarius, a learned Jesuit; by whom the first species was described and well figured in his *Flora, s. de florum Cultura*, 1633.—*Hesperides*, Amst. 1646.)

Lin. gen. n. 1018. Reich. 1104. Schreb. 1102.

Burm. Juss. 57.

Class. 20. 2. Gynandria Trigynia.

Nat. order of *Ensatæ*.—*Irides* Juss.

GENERIC CHARACTER.

CAL. *Spathes* two, alternate, keeled, involute; each one-flowered.

COR. *Petals* six, oblong, acuminate, revolute, curled and fringed: alternately smaller.

STAM. *Filaments* three, sitting on the style. *Anthers* roundish, twin, rough-hairy.

PIST. *Germ* inferior, roundish, three-cornered, obtuse. *Style* simple, erect. *Stigmas* three, bifid, cowled, fringed and curled.

PER. *Capsule* oblong, three-cornered, thicker at top, three-celled, three-valved.

SEEDS numerous, roundish.

OBS. This genus, according to Thunberg, should be referred to *Moræa*.

ESSENTIAL CHARACTER.

One-styled. *Spathes* one-flowered. *Petals* six, waved and curled. *Stigmas* cowled. *Caps.* three-celled, inferior.

SPECIES.

1. *Ferraria undulata*. Cape *Ferraria*.

Lin. spec. 1353. Juss. 820. Reich. 4. 43. Mill.

fig. 187. t. 280. Curt. magaz. 144. Jacq. hort.

t. 63. Barr. ic. 1216. (Iris). Rudb. ely. 2. 49.

f. 9. (Narcissus). Ferr. cult. 168. t. 171. Mor.

bist. 2. 344. f. 4. t. 4. f. 7. (Gladiolus).

Stem many-flowered.

[2. *Ferraria pavonia*. Mexican *Ferraria*.

Lin. Juss. 820. suppl. 407. Mutis amer. 1. t. 15.

Hern. mex. 276. Swert. flor. 2. t. 31. f. 2.

(Flos Tigris).

Scape one-flowered.]

DESCRIPTIONS, &c.

1. Root tuberous, roundish, compressed, in shape like that of the Indian Corn-flag, but larger, in the centre of the upper side it has a hollow like a navel, whence comes out the stalk; the outer skin is of a light brown colour, the inside is white. It lies inactive every other year, and sometimes will remain two years without putting out either leaves or fibres. Stem a foot and half high, taper and about the thickness of a man's little finger. It has lanceolate leaves the whole length, placed alternately, and em-

bracing: the lower leaves are from four to five inches long, and an inch and half broad towards their base, ending in obtuse points; they are a little keel-shaped, and of a light-green colour. Flowers axillary, solitary, from the upper part of the stem, wrapped in a double sheath, out of which the flower-bud rises about an inch. The sheath is composed of a double row of keel-shaped leaves; the inner row being shorter than the outer, and situated obliquely to it. The petals are of a pale sky-blue on the inside, and of a dirty white on the outside. The anthers are situated below the division of the filaments, and are terminated by small silky hairs.

[This is one of the most singular and beautiful vegetable productions; and it is much to be regretted that its flowers are of very short duration, opening in the morning, and finally closing in the afternoon of the same day; a strong plant will, however, throw out many blossoms in succession. By its structure and œconomy, it approaches very near to the *Sisyrinchium*. It flowers from february to may^a.

Native of the Cape of Good Hope. Cultivated in 1759, by Mr. Miller, to whom it was sent by Dr. Job Baster of Zirkzee.—Mr. Curtis's figure was drawn from a plant which flowered in 1791, in the possession of R. Forster, Esq. of Turnham Green.

Mr. Miller's second sort (*F. ensiformis*) may perhaps be no more than a variety of this.] It differs from it in having smaller roots, and longer sword-shaped leaves, which have deeper veins; the stalk also does not divide so much, the flowers are smaller, and less fringed on their borders.

[2. Root bulbous. Scape a span high, one-flowered. Leaves sheathing, one or two; the lower ones longer and narrower. Spathe two-leaved, compressed. Corolla bell-shaped; the three outer petals larger, ovate, at the tip a little truncate with a minute dagger point; the three inner one-third of the size, alternate, hastate, subsessile, spotted. Filaments sheathing the style: anthers three, linear, nearly the length of the stigmas. Germ pedicelled. Stigmas two-parted, filiform. Capsule linear.

Native of Mexico, where it was observed by Mutis^b.]

PROPAGATION AND CULTURE.

They are both propagated by offsets sent out from the roots, in the same way as the *Ixia*, and should be cultivated in the same manner as is directed for those and the African *Gladiolus*, being too tender to thrive in the open air in England, nor do they succeed well in a green-house; therefore the best method is, to make a border four feet wide, either in the front of the green-house or stoves, covering it with a proper frame and glasses, so that the plants may enjoy the free air in mild weather, but be protected from frost. In such a frame, most of the African bulbous and tuberous rooted plants may be brought to great perfection.

[FERREOLA. From *Ferrum*, iron; on account of the hardness of the wood.)

Roxb. corom. 35. n. 45.

Class. 22. 6. Dioecia Hexandria.

GENERIC CHARACTER.

Male.

CAL. *Perianth* one-leafed, a little ventricose, hairy, three-cleft: clefts ovate, acute, erect, shorter than the tube, the third still shorter and blunter.

COR. one-petalled, tubular, smooth, somewhat fleshy: border three-cleft: clefts erect, acute, hirsute on the outside with long white hairs, pressed close, within naked.

STAM. *Filaments* six (five, seldom more, K.) short, inserted round a semiglobose receptacle, upright, much shorter than the tube of the corolla. *Anthers* oblong, acute, erect, white, longer than the filaments.

Female.

CAL. and COR. as in the male.

^a Curtis.

^b Linn. suppl.

Pist. *Germ* oval, (linear-oblong, *K.*) *Style* short, (longer than the calyx, *K.*) *Stigma* flat, three-notched, (divided into small lobes, commonly four, *K.*)

PER. *Berry* round, smooth, red, pulpy, size of a large pea.

SEEDS two, large, on one side flat, on the other round.

ESSENTIAL CHARACTER.

Cal. one-leafed, three-cleft. *Cor.* one-petalled, three-cleft.

MALE. *Filaments* six, inserted into a semiglobose receptacle.

FEM. *Germ* oval. *Berry* round, smooth, two-seeded.

SPECIES.

1. *Ferreola buxifolia*.

Roxb. corom. 35. n. 45. t. 45.

Ehretia ferrea. *Willden. phytogr.* 1. p. 4. t. 2. f. 2.

Pisonia? *buxifolia.* *Rottboell in nov. act. Hafn.* 2. 536. t. 4. f. 2.

Pisihanna of the Telingas.

Irumbilli of the Tamuls. *Koenig.*

DESCRIPTION, &c.

Trunk irregular, covered with a dark rust-coloured bark, dividing into very numerous irregular branches. Leaves alternate, short-petioled, oval, entire, very smooth, shining, firm, about half or three quarters of an inch long, and half an inch broad.

Among the mountains this grows to a small tree, but in the low countries it is only a shrub. It flowers during the hot season. The berries, when ripe, are universally eaten, and are very well tasted. The wood is dark-coloured, remarkably hard and durable, and where its size will admit, is employed for such uses as require the most durable, heavy wood.

Native of Coromandel^c.]

FERULA, (of *Pliny*. Either a *ferendo*, because the stalk was used for a walking-stick; or a *feriendo*, because schoolmasters used it for striking boys on the hand, whence *Martial* calls it *Sceptrum pædagogorum*.)

Eng. Fennel-Giant. *Fr.* *Ferule*.

Lin. gen. n. 343. *Reich.* 373. *Schreb.* 475.

Tournef. 170. *Juss.* 222. *Gærtn.* t. 85.

Class. 5. 2. Pentandria Digynia.

Nat. order of Umbellatæ or Umbelliferae.

GENERIC CHARACTER.

CAL. *Umbel* universal manifold, globular: partial similar. *Involucre* universal caducous: partial many-leaved, linear, small. *Proper perianth* scarcely observable.

COR. *Universal* uniform: *floscules* all fertile: proper consisting of five oblong, straightish petals, nearly equal in size.

STAM. *Filaments* five, the length of the corolla. *Anthers* simple.

Pist. *Germ* turbinate, inferior. *Styles* two, reflex. *Stigmas* obtuse.

PER. *Fruit* oval, plane-compressed, submargined, marked on both sides with three raised lines, and bipartite.

SEEDS two, very large, elliptic, flat on both sides, and marked with three distinct streaks.

OBS. The peduncle of the primary umbel admits opposite lateral peduncles.

ESSENTIAL CHARACTER.

Fruit oval, plane-compressed, with three streaks on each side.

SPECIES.

1. *Ferula communis*. Common Fennel-Giant.

Lin. spec. 355. *Reich.* 1. 682. *hort. cliff.* 95. upf. 61.

Ferula. *Dod. pempt.* 321. *Ger.* 898. *emac.* 1056.

Riv. pent. t. 9.—femina *Plinii.* *Baub. pin.* 138.

Mor. umb. 35. t. 2. *bist.* 3. 309. f. 9. t. 15. f. 3.—

tenuiore folio. *Park. theat.* 875.—fol. *foeniculi,*

fem. latiore & rotundiore. *Baub. bist.* 3. 43. *Raii*

bist. 420.

Leaflets linear very long simple.

2. *Ferula glauca*. Glauous Fennel-Giant.

Lin. spec. 355. *Reich.* 682. *hort. cliff.* 95.

F. fol. glauco, fem. lato oblongo. *Baub. bist.* 3. 45.

Raii bist. 420. See the 4th species.

• Roxburgh.

Leaves superdecompound, leaflets lanceolate-linear flat.

3. *Ferula tingitana*. Tangier Fennel-Giant.

Lin. spec. 355. *Reich.* 682. *hort. cliff.* 95. upf. 61.

Gærtn. fruct. 2. 28. *Riv. pent.* t. 10. *Herm.*

par. t. 165. *Mor. bist.* 3. 309.

Leaflets laciniate, the little jags three-toothed, unequal, brilliant.

4. *Ferula Ferulago*. Broad-leaved Fennel-Giant.

Lin. spec. 356. *Reich.* 682. *hort. cliff.* 95.

F. latiore folio. *Mor. bist.* 3. 309. f. 9. t. 15. f. 1.

F. fol. glauco, &c. *Raii bist.* 420. n. 2.

Ferulago lat. fol. *Baub. pin.* 148.

Leaves pinnatifid, pinnae linear flat trifid.

5. *Ferula orientalis*. Narrow-leaved Fennel-Giant.

Lin. spec. 356. *Reich.* 682. *hort. cliff.* 95. *Tourn.*

itin. 2. t. 379.

Pinnae of the leaves naked at the base, leaflets bristle-form.

6. *Ferula meoides*.

Lin. spec. 356. *Reich.* 683. *hort. cliff.* 95.

Pinnae of the leaves appendicled on each side, leaflets bristle-form.

7. *Ferula nodiflora*. Knotted Fennel-Giant.

Lin. spec. 356. *Reich.* 683. *hort. upf.* 61. *Scop.*

carn. n. 337. *Jacqu. austr.* 5. 28. *app. t.* 5.

Libanotis ferulae fol. & femine. *Baub. pin.* 158.

Park. theat. 881. f. 2. 882. *Baub. bist.* 3. 41. fig.

Raii bist. 421. 4.

Panax asclepium, ferulae facie. *Lob. ic.* 783. *Ger. emac.* 1057. f. 3.

Leaflets appendicled, umbels sessile.

[8. *Ferula canadensis*.

Lin. spec. 356. *Reich.* 683. *hort. upf.* 61. *Gron.*

virg. 147. *edit. oct.*

Lucid.

9. *Ferula Asa-foetida*.

Lin. spec. 356. *Reich.* 683. *mat. med.* 79. *Plenck,*

ic. t. 203. *Woodv. med. bot.* 22. t. 8. *Kæmpf.*

amæn. 535. t. 536. *Hope in Philos. trans.* 75.

p. 36.

Leaves alternately sinuate obtuse.

DESCRIPTIONS, &c.

These are herbaceous umbellate plants, some of them with large lofty stems; the leaves pinnate and superdecompound: several lateral umbels spring from the peduncle of the principal one that terminates the stem.]

1. Common Fennel-Giant, if planted in a good soil, will grow to a great height, and divide into many branches. The lower leaves spread more than two feet every way, and branch out into many divisions, which are again subdivided into many smaller; they are of a lucid green, and spread near the ground. From the centre of the plant comes out the flower-stem, which when the plants are strong, will be near as large as a common broom-stick, and ten or twelve feet high, with many joints; there issues from it, when cut, a fetid yellowish liquor, which will concreate on the surface of the wound. This stem is terminated by large umbels of yellow flowers, which come out at the end of June or the beginning of July. The seeds ripen in September, and the stalk decays soon after; when this is dry, it is full of a light pith which easily takes fire. The Sicilians use it for tinder. Hence the fable of Prometheus. The leaves decay soon after the seeds are formed; but the roots continue several years, especially in a dry soil, and annually produce flowers and seeds.—[Native of Italy, Sicily, the South of France, Greece, &c. In Apulia, where it grows in great plenty, it is grateful to the buffaloes, which form the chief part of the substance of many farmers there. When it becomes of a considerable size they use it to make stools and bee-hives.]

It was cultivated by Gerarde before 1597: and he informs us that it attained to the height of fourteen or fifteen feet in his garden, growing greater and fairer than in the places whence it came.]

2. The leaves are composed of many narrow flat segments, of a gray colour, and are divided into

* Symonds in Young's Annals.

many parts. Stem from three to four feet high, terminated by an umbel of yellow flowers, appearing in July, and succeeded by oval compressed seeds, ripening in autumn.

Native of Spain, Italy, and Sicily. Cultivated in 1768, by Mr. Miller^b.]

3. Leaves large spreading near the root, of a very lucid green, divided and subdivided into many parts; leaflets much broader than in the other sorts, and divided at the end into three unequal segments. Stems strong, eight or ten feet high, terminated by large umbels of yellow flowers. [Fruit lenticular-bracted, ecalyced, of a dirty bay colour. Seeds of the same form, foliaceous-compressed, very slightly convex on one side, surrounded with a narrow rim, flat on the other or scarce sensibly concave, without streaks or rim^c.

It is a native of Spain and Barbary; and was cultivated in 1683, by Mr. James Sutherland^d.]

4. Height seven or eight feet. The leaves branch out on every side pretty wide, and the leaflets are broader than those of the other sorts, except the preceding; but they are longer than those, and of a darker green colour, ending in three points. The umbels are large, and the flowers are yellow.

Native of Sicily.

5. This is of much humbler growth than either of the former; the stalks seldom rising much more than three feet high. The lower leaves branch into many divisions, with fine bristle-shaped leaflets. The umbel of flowers and the seeds are small.

Found in the Levant by Tournefort.

6. This has very branching leaves, with angular channelled foot-stalks. At every joint are two opposite branches; those towards the bottom are nine or ten inches long, and the others diminish gradually to the top: these side-branches send out smaller ones at each joint in the same manner, having very fine leaves on them, like those of Spignel or *Meum*, standing quite round in shape of whorls. The flower-stalks are three feet high, having a pretty large umbel of yellow flowers at the top: these are succeeded by oval flat seeds, which ripen in the autumn.

Native of the Levant.

7. This is about three feet high. The leaves are much divided, and the leaflets are very narrow and entire. Umbels small, and close to the stalks between the leaves at the joints.

[The extreme divaricate ramifications of the leaves sustain acroste leaflets usually in threes. Four umbels come out from each joint of the stem; these are peduncled and not sessile. Involucres very short and reflex. Rays of the universal umbel to fourteen, of the umbellule to twelve. Petals yellow^e.

Native of Istria, Austria, and Carniola. These were all cultivated in 1759, by Mr. Miller^f.

8. See *Angelica lucida*; from which however the specimen in Gronovius's herbarium, now in the possession of Sir Joseph Banks, is very different.

9. The *Asafoetida*, as described by Dr. Hope, is an umbelled plant, three feet high, upright, branched, glaucous, with a yellow flower. Root perennial. Root-leaves six, procumbent, three-lobed-ovate, many times pinnate; leaflets gashed, subacute, subdecurent; common petiole flat above, with a raised line running longitudinally through the middle of it. Stem two feet high, roundish, annual, slightly streaked, having only one pair of imperfect leaves about the middle: branches naked, spreading; the three lower ones alternate and supported by the concave membranaceous petiole of the imperfect leaf; the four middle ones are in whorls; the uppermost from the top of the stem, eight in number, the inner ones erect: all these support a compound sessile terminating umbel, besides from three to six branchlets placed on the outside, bearing the compound umbels: in this manner the lower branches support five, seldom six branchlets, the

middle ones three or four, the upper ones one or two. The universal umbel has from twenty to thirty rays; the partial from ten to twenty, with subsessile florets. There is no involucre, either general or partial. The florets of the sessile umbel are fertile, of the peduncled umbel mostly abortive. Petals equal, flat, ovate; at first spreading, then reflex, with the tip ascending. Filaments awl-shaped, longer than the corolla, curved in: anthers roundish. Fruit oblong.—Every part of the plant, when wounded, poured out a rich milky juice, resembling the imported drug in smell and taste, and at times a smell like Garlick, such as a faint impregnation of *Asafoetida* yields, was perceivable at the distance of several feet.

Though *Asafoetida* has been used in medicine for many ages, having been introduced by the Arabian physicians near a thousand years ago, yet there was no satisfactory account of the plant which yielded it, till Kämpfer described and figured it in his *Amoenitates Exoticæ*, published in 1712.

Kämpfer travelled over a great part of Asia towards the end of the last century, and was in Persia, upon the spot where this drug is collected. His plant differs in many respects from that which is described above; but his fidelity having never been impeached, we must conclude that this gum, like several others, is the produce of more than one species^g.

According to Kämpfer, the root of the *Asafoetida* is perennial, tapering, ponderous, increasing to the size of a man's arm or leg, covered with a blackish bark, and near the top beset with many strong rigid fibres; the internal substance is white, fleshy, and abounds with a thick milky juice, yielding an excessively strong fetid alliaceous smell. Stem simple, erect, straight, round, smooth, striated, herbaceous, six or seven inches in circumference at the base, and rising luxuriantly to the height of two or three yards or more. Root-leaves six or seven, near two feet long, bipinnate, pinnules alternate, smooth, variously sinuated, lobed, and sometimes lanceolate, of a deep green colour and fetid smell. Umbels compound, plano-convex, terminating, many-rayed. Seeds oval, flat, foliaceous, reddish brown, rough, marked with three longitudinal lines, having the garlick smell, and a sharp bitter taste.

It varies much from soil and situation, not only in the form of the leaves, but in the quality of the juice^h.

It is a native of Persia; and was raised from seeds, sent from the mountains of Ghilan, by Dr. Pallas at Petersburg. Dr. Guthrie sent thence two of the roots to Dr. Hope, one of which grew, flowered and seeded in the botanic garden at Edinburgh in 1782ⁱ.

Asafoetida is the concrete juice of the root, and is procured by the peasants who live in the neighbourhood of the mountains in the provinces of Chorasaa and Laar in Persia.—When the leaves begin to decay, the oldest plants are selected, not less than four years standing. The earth is partly cleared away, so as to expose the upper part of the root. The leaves and stem are twisted off, and used as a covering to screen it from the sun. In this state the root is left forty days, when the covering being removed, the top of the root is cut off transversely. It is then screened again for forty-eight hours, when the juice is scraped off, and exposed to the sun to harden. This done, a second section is made, the screen again employed, and the juice obtained a second time as before. Thus the *Asafoetida* is eight times repeatedly collected from the same root; but after the third section, it remains eight days to recover a sufficient stock of juice.

Asafoetida is well known by its peculiar nauseous fetid smell, the strength of which is the surest test of its goodness. This odour is extremely volatile, and of course the drug loses much of its efficacy in keeping. It comes in large irregular masses, com-

^a Hort. kew.

^b Gartner.

^c Hort. kew.

^d Scopoli.

^e Hort. kew.

^f Philof. Transact.

^g Woodville.

^h Philof. Trans.

posed of various shining little lumps or grains, partly whitish, partly brownish or reddish, and partly of a violet hue: those are accounted the best which are clear, of a pale reddish colour, and variegated with many fine white tears. It is a gummy-resin, but has the gum in largest quantity.

It is the most efficacious of the fetid gums; and is commonly used in hysteria, hypochondriasis, some symptoms of dyspepsia, flatulent cholics, and most diseases termed nervous: it is thought to be the most powerful remedy we possess for those peculiar convulsive and spasmodic affections which often recur in hysterics. It is recommended as an emmenagogue, anthelmintic, expectorant, antiasthmatic, and anodyne*.]

PROPAGATION AND CULTURE.

All these sorts have roots which will continue several years; these have thick strong fibres, which run deep in the ground, and divide into many smaller, spreading to a considerable distance every way: the stalks are annual, and decay soon after they have perfected their seeds. As these plants spread very wide, so they should have each four or five feet room; nor should they stand near to other plants, for their roots will rob whatever plants grow near them of their nourishment.

They are all propagated by seeds, which should be sown in the autumn; for if they are kept out of the ground till the spring, they frequently fail, and those which succeed remain a year in the ground, so that much time is lost. The seeds may be sown in drills, by which method the ground may be easier kept clean; they must not be nearer than a foot row from row, and the seeds may be scattered two or three inches asunder in the drills; when the plants come up, they must be kept clean from weeds; and where they are too close together, they should be thinned, to allow them room to grow, for they will not be strong enough to remove till they have had two years growth; then in the autumn so soon as their leaves decay, the roots should be taken up with great care, so as not to cut or injure the tap or downright root, and then planted in the places where they are designed to remain, for after this transplanting they should not be removed. They delight in a soft, gentle, loamy soil, not too wet, and are very rarely injured by the hardest frost.

FERULA. See *Bubon* and *Peucedanum*.

[FERULAGO. See *Ferula*.

FESCUE-GRASS. See *Festuca*.

FESTUCA. (The shoot of a tree or herb, Pliny and Columella; or grass, Varro. The Prætor's wand which the lictor laid on the head of a slave, when he was made free. Plautus.—From fetus, which is from the old verb feo.)

Engl. *Fescue-grass*. Fr. *Fétuque*.

Lin. gen. n. 88. Reich. 94. Schreb. 119. Juss. 32.

Class. 3. 2. Triandria Digynia.

Nat. order of Gramina, Gramineæ or Grasses.

GENERIC CHARACTER.

CAL. Glume many-flowered, two-valved, upright, containing the floscules in a slender (oblong, roundish, *syst. nat.*) spikelet: valves awl-shaped, acuminate, the lower smallest.

COR. two-valved: lower valve largest, of the same form with the calyx, but larger, roundish, acuminate, ending in a dagger-point.

NECTARY two-leaved: leaflets ovate-lanceolate, acute, gibbous at the base; or one-leaved, plano-concave, horizontal, emarginate.

STAM. Filaments three, capillary, shorter than the corolla. Anthers oblong.

PIST. Germ turbinate. Styles two, short, reflex. Stigmas simple.

PER. none. Corolla very closely shut, growing together, and not gaping.

SEED single, slender-oblong, very sharp at both ends, grooved longitudinally.

* Woodville.

ESSENTIAL CHARACTER.

Cal. two-valved. Spikelet oblong, roundish, with acuminate glumes.

SPECIES.

1. *Festuca bromoides*. Barren *Fescue-grass*.
Lin. *syst.* 118. Reich. 1. 202. Hudf. angl. 46.
With. 96. Villars dauph. 2. 104. Raii syn. 415. 13. *bist.* 1287. 16. Pluk. alm. t. 33. f. 10.

Panicle directed to one side, spikelets upright, one valve of the calyx entire, the other acuminate.

2. *Festuca ovina*. Sheep's *Fescue-grass*.
Lin. spec. 108. Reich. 202. fl. suec. n. 91. Hudf. angl. 44. With. 97. Relb. cant. n. 76. Hall. belv. n. 1442. Pollich pal. n. 101. Leers herborn. n. 74. t. 8. f. 3, 4. Krock. files. n. 153. Stilling. misc. t. 8. Villars dauph. 2. 97. Fl. rust. t. 102.

Bromus ovinus. Scop. carn. n. 112.

- Gramen junceum* 2. Baub. pin. 5. prodr. n. 34. Scheuch. 279. t. 6. f. 8. Loefel. pruss. 110. t. 24. Mor. *bist.* 3. 182. f. 8. t. 3. f. 13. Raii syn. 410. n. 9. *bist.* 1288. n. 23.

- β. *F. vivipara*. Lin. spec. 108. Reich. 203. Fl. suec. 1. n. 94. Hudf. angl. 44. 1. β. With. 97. γ. Scheuch. agr. 213. prodr. t. 1. f. 2. Raii syn. 410. n. 11. t. 22. f. 1.

Panicle directed to one side contracted awned, culm four-cornered almost naked, leaves bristle-shaped.

3. *Festuca rubra*. Purple or Red *Fescue-grass*.
Lin. spec. 109. *syst.* 118. fl. suec. n. 92. Hudf. angl. 45. With. 97. Relb. cant. n. 78. Hall. belv. n. 1440. Pollich pal. n. 103. Gunn. norv. n. 581. Leers herborn. n. 76. t. 8. f. 1. Krock. files. n. 155. Stilling. misc. t. 9. Villars dauph. 2. 101.

Gramen, &c. Scheuch. 287. t. 6. f. 9.

Panicle directed to one side scabrous, spikelets six-flowered awned, floscule at the end awnless, culm semicylindric.

4. *Festuca amethystina*.
Lin. spec. 109. Reich. 204. With. 98. Hall. belv. n. 1442. γ. Villars dauph. 2. 102. Scheuch. 276. t. 6. f. 7.

Panicle flexuose, spikelets directed to one side, inclined, nearly awnless, leaves bristle-shaped.

5. *Festuca reptatrix*.
Lin. spec. 108. Reich. 204.

Branches of the panicle simple, spikelets subsessile.

6. *Festuca duriuscula*. Hard *Fescue-grass*.
Lin. spec. 108. *syst.* 118. Reich. 204. Hudf. angl. 44. With. 98. Relb. cant. n. 77. Hall. belv. n. 1437. Pollich pal. n. 102. Neck. gallob. 61. Leers herborn. n. 75. t. 8. f. 2. Krock. files. n. 154. Villars dauph. 2. 98.

Gramen, &c. Baub. pin. 5. n. 3. Lob. obs. 9. Raii syn. 413. n. 4. t. 19. f. 1. *bist.* 1285. n. 9.

Panicle directed to one side oblong, spikelets oblong of an even smooth surface, leaves bristle-shaped.

7. *Festuca dumetorum*. Pubescent *Fescue-grass*.
Lin. spec. 109. Reich. 205. Hudf. angl. 45. 2. β. With. 98. Fl. dan. t. 700.

Panicle spike-form pubescent, leaves filiform.

8. *Festuca elatior*. Tall *Fescue-grass*.
Lin. *syst.* 118. spec. 111. β. Reich. 207. Hudf. angl. 47. With. 100. Curtis lond. n. 66. Relb. cant. n. 81. Pollich pal. n. 106. Neck. gallob. 60. Leers herborn. n. 79. t. 8. f. 6. Schreb. gram. 34. t. 2. Hall. belv. n. 1451. (Poa).

Gramen, &c. Mor. *bist.* f. 8. t. 2. f. 15. Scheuch. 266. t. 5. f. 18. Raii syn. 411. n. 14, 15. (Hudf.) *bist.* 1286. 10. (Lin.)

Panicle directed to one side upright, spikelets mostly awned, the outer ones cylindric.

9. *Festuca myurus*. Wall *Fescue-grass*.
Lin. spec. 109. Reich. 205. Hudf. angl. 46. With. 99. Relb. cant. n. 79. Hall. belv. n. 1443. Pollich pal. n. 104. Neck. gallob. 61. Leers herborn. n. 77. t. 3. f. 5. Krock. files. n. 156. Villars dauph. 2. 103.

Gramen, &c. Scheuch. 293. t. 6. f. 11, 12. Mor. f. 8. t. 7. f. 43. Barrel. ic. 99. t. 6. f. 11, 12. Ger.

- Ger. emac.* 29. 2. *Park. theat.* 1162. 8. *Raii syn.* 415. n. 12. *bist.* 1286. n. 15.
Panicle spiked, calyxes extremely minute awnless, flowers scabrous, awns long.
10. *Festuca spadicea.* *Bronze-flowered Fescue-grass.*
Lin. syst. 118. *Reich.* 205. *Gouan illustr.* 4. *Smith in Linn. trans.* 2. 113. *Villars dauph.* 2. 109.
Anthoxanthum paniculatum. *Lin. spec.* 40. *amoen.* 1. 145.
Poa Gerardi. *Allion. pedem.* n. 2201. *Ger. prov.* 91. n. 11. t. 2. f. 1. *Hall. belv.* n. 1463.
Gramen sparteum, panicula flavescente. *Rudb. elys.* 1. 40. f. 14. copied in *Linn. trans.* 2. t. 10.
Gr. paniculatum alpinum, &c. *Mich. hort. pisan.* 75.
Gr. montanum, panic. spadicea crassiore. *Tournef. inst.* 524.
Nardus spuria narbonensis. *Baub. pin.* 13.
N. Gangitis spuria narbonæ. *Lob. adv.* 43.
Panicle erect, spikelets ovate four-flowered, glumes acuminate awnless, leaves bristle-shaped smooth pungent.
11. *Festuca phoenicoides.*
Lin. syst. 118. *Reich.* 206. *mant.* 33. *Ger. prov.* 95. n. 5. t. 2. f. 2. *Gouan illustr.* 4.
Gramen phoenicoides, &c. *Baub. bist.* 2. 477. *Pluk. alm.* t. 33. f. 4.
Racems undivided, spikelets alternate almost sessile cylindrical, leaves involute mucronate and pungent.
12. *Festuca fusca.*
Lin. spec. 109. *Reich.* 206.
Panicle erect branched, spikelets sessile keeled awnless.
13. *Festuca decumbens.* *Decumbent Fescue-grass.*
Lin. spec. 110. *syst.* 119. *Reich.* 206. *Fl. suec.* n. 93. *Huds. angl.* 47. *With.* 101. *Relb. cant.* n. 83. *Hall. belv.* n. 1434. *Pollich pal.* n. 105. *Neck. gallob.* 60. *Leers herborn.* n. 78. t. 7. f. 5. *Krock. files.* n. 157. t. 29. *Fl. dan.* t. 162. *Villars dauph.* 2. 112.
Gramen, &c. *Scheuch.* 170. t. 3. f. 16. A, B, C. *Monti* 53. t. 2. f. 1. *Mor. bist.* 3. 177. f. 8. t. 1. f. 6. *Pluk. alm.* t. 34. f. 1. *Raii syn.* 408. 11. *bist.* 1288. n. 1.
Panicle upright, spikelets subovate awnless, calyx larger than the floscules, culm decumbent.
14. *Festuca pauciflora.*
Lin. syst. 119. *Thunb. jap.* 52.
Panicle effuse, spikelets with about four flowers awned and scabrous, leaves villose.
15. *Festuca fluitans.* *Flote Fescue-grass.*
Lin. spec. 111. *Reich.* 207. *Fl. suec.* n. 95. *Huds. angl.* 46. *With.* 100. *Curtis lond.* 1. 7. *Relb. cant.* n. 82. *Pollich pal.* n. 107. *Neck. gallob.* 59. *Gunn. norw.* n. 409. *Leers herborn.* n. 80. t. 80. f. 5. *Krock. files.* n. 159. *Schreb. gram.* 37. t. 3. *Fl. dan.* t. 237. *Stilling. misc.* t. 10. *Plenck, ic.* t. 44. *Villars dauph.* 2. 111.
Poa fluitans. *Scop. carn.* n. 106. *Lin. hort. cliff.* 28. *Hall. belv.* n. 1453.
Gramen spicatum aquaticum, &c. *Baub. pin.* 2. 1. *theatr.* 41. *Scheuch.* 199. t. 4. f. 5. *Monti* f. 35. *Mor.* t. 3. f. 16. *Ger. emac.* 14. f. 1. *Park. theat.* 1275. 8. *Baub. bist.* 2. 490. *Raii bist.* 1281. 7. *syn.* 412. 17. *Loefel. pruss.* 108. t. 21. *Tabern. ic.* 216. *Lob. ic.* 1. 12.
Panicle branched erect, spikelets subsessile cylindric awnless.
16. *Festuca pratensis.* *Meadow Fescue-grass.*
Huds. angl. edit. 1. 37. *With.* 101. *Curt. lond.* n. 66. *pract. obs.* 16. t. 5. *Mus. rust.* t. 4. f. 2. *Fl. rust.* t. 84. *Scheuch. agr.* 200. 1. & 202. 2. *Raii bist.* 1286. 10. *syn.* 411. 16. *Park. theat.* 1145. (Phoenix).
F. fluitans pratensis. *Huds. angl. ed.* 2. 47. γ.
F. elatior. *Lin. suec.* n. 94.
β. *Festuca loliacea.* *Huds. angl.* 47. *Wither. arr.* 101. *Hall. belv.* n. 1452. (Poa). See n. 26.
Panicle directed one way oblique, spikelets without awns almost linear, leaves flat.
17. *Festuca cristata.*
Lin. spec. 111. *Reich.* 208.

- Panicle spiked lobed, spikelets ovate broad six-flowered hirsute.*
18. *Festuca calycina.* *Bearded-leaved Fescue-grass.*
Lin. spec. 110. *Reich.* 208. *amæn.* 3. 400. *Loefl. itin.* 116. *Cavan. bist.* t. 44. f. 2. *Lamarck encycl.* 2. 463.
Panicle contracted, spikelets linear, calyx longer than the floscules, leaves bearded at the base.
19. *Festuca misera.*
Lin. syst. 119. *Thunb. jap.* 52.
Panicle condensed, glumes awned scabrous, culm kneed broken.
20. *Festuca spinosa.* *Thorny-branched Fescue-grass.*
Lin. syst. 119. *suppl.* 111.
Becoming shrubby, branches and branchlets thorny, pedicels prickly.
21. *Festuca uniglumis.* *Sea Fescue-grass.*
Ait. hort. kew. 108. *Raii syn.* 413. n. 3. t. 17. f. 2. *Petiv. conc. gram.* n. 101.
Lolium bromoides. *Huds. angl.* 55. *Wither. arr.* 121.
Panicle almost simple condensed directed one way awned, calyx one-valved, floscules distant.
22. *Festuca cambrica.* *Welsh Fescue-grass.*
Huds. angl. 45. *With.* 99.
Panicle directed one way oblong upright branched, spikelets awned smooth, leaves flattish naked.
23. *Festuca indica.* *Indian Fescue-grass.*
Retz. obs. 4. 21. n. 59. *Rheed. mal.* 12. t. 45.
Panicle contracted upright, spikelets compressed somewhat awned with about six flowers.
24. *Festuca scabra.* *Rugged-flowered Fescue-grass.*
Vahl symb. 2. 21.
Panicle directed the same way, squeezed close, erect, spikelets compressed six-flowered, florets rugged.
25. *Festuca pungens.*
Vahl symb. 1. 10. t. 2.
F. mucronata. *Forsk. descr.* 22. n. 74.
Spike glomerate ovate, spikelets six-flowered columnar lanuginose, leaves involute rigid.
26. *Festuca loliacea.* *Darnel Fescue-grass.*
Curt. lond. n. 66. *Huds. angl. ed.* 1. 38. *Hall. belv.* n. 1452.
Spiked, spikelets alternate sessile compressed awnless.

DESCRIPTIONS, &c.

Panicled Grasses. According to Scopoli, *Festuca*, *Bromus*, and *Triticum* are one genus. In Dr. Stokes's opinion the two last are so, *Bromus* being only a panicled *Triticum*: but in *Festuca*, the outer valve of the corolla gradually narrows into the awn, whereas in the others the awn is inserted below the point of the valve, or the edge of the valve swells out into a thin membrane on each side the base of the awn. In *Festuca*, the awn is an extension of the whole valve; in *Bromus* and *Triticum*, only of the keel or middle rib, as in *Avena**. It is to be lamented that this obvious character is not so constant as to be depended on.

1. *F. bromoides* differs from *F. myurus* in the panicle's resembling a spike, and the glumes not being ciliate. It is like *F. ovina*, but has broader leaves*. Ray observes, that the panicle is broader and shorter than in *F. myurus*; the spikelets are also larger and broader; and the culm has three or four joints.

Its height is about half a foot; the culms are inclined; the leaves are thin and smooth, the lower part of them quickly drying up; the panicles branch at the base, they are composed of smooth flattened spikelets, containing six or seven flowers; the outer valve of the corolla terminates in a long awn; the calyx has the outer base very small, the inner is large, and ends in an awn like the corolla*.

According to Withering our plant is *Gramen bromoides panicula heteromalla, &c.* *Scheuch.* 290. t. 6. f. 10. and not, *Gr. paniculatum brom. &c.* *Scheuch.* 297. t. 6. f. 14. On the contrary Villars is of opinion that Scheuchzer has repeated the same

* Stokes in Withering, p. 96.

* Linn.

* Villars.

plant five or six times under different names and descriptions, from p. 290 to 293, and in p. 296, 297.

Native of England and France, on walls and in sandy pastures; flowering in June and July. Annual.

2. *Festuca ovina* or Sheep's Fescue, is a small grass, scarcely exceeding six inches in height; perennial, flowering in June and July^d. Floscules three to six in each spikelet, generally acuminate, or acuminate-awned^e. Culms somewhat angular, with two or three coloured joints. Root-leaves hirsute, stem-leaves smooth. Lower spikelets peduncled, linear, four-flowered with the rudiment of a fifth; glumes unequal, the larger ovate, the smaller sharp^f.

Chiefly on dry sandy soils, and in elevated situations; on all our finest sheep-downs common.

This grass has been much celebrated for feeding sheep. Linneus affirms that it is their principal food, and that they have no relish for hills and heaths that are without it. Gmelin says that the Tartars choose to fix during the summer where there is the greatest plenty of this grass, because it affords a most wholesome nourishment to all kinds of cattle, but chiefly sheep. It certainly is a very sweet feed, as far as it goes, on sheep downs. Mr. Anderson does not scruple to affirm that it is capable of affording an immense quantity of hay, that it promises to be one of the best grasses our country produces, and to make a most valuable acquisition to the farmer. This is carrying our prejudices very far indeed, for in its native soil, on dry elevated heaths and commons, its foliage is hard and wiry, its produce very trifling. In such situations it is of a purplish-brown colour in summer. In a rich moist soil indeed the foliage retains its verdure, and becomes much longer, but being still a small plant, it can never be productive, and consequently cannot have any pretensions to be considered as fit for a hay grass. Were the Sheep's Fescue to be sown in such a soil, the grasses and other plants natural to that soil would quickly overpower it; and it is not merely the grass, but the nature of the soil in which it grows, the elevated situation, and the dry-salubrious air that are acceptable to sheep.

Mr. Curtis, who has combated the vulgar notion of the excellence of this poor wiry grass for feeding cattle, particularly sheep, has however found out that it is excellent for the purpose of making a fine grass-plat, requiring little mowing. When it has once got possession of the soil, it will form so thick a turf, as to suffer few intruding weeds, and may be kept in order with little trouble. For this purpose it must be sown about the middle of August, in an open, but not too dry situation, broad-cast, and that thickly, on ground nicely prepared and levelled^g.

β. In Sweden, and on the mountains of Wales, Yorkshire, and Westmoreland.

3. Red Fescue Grass is distinguished from the foregoing by its greater size, its red colour when ripe, and the culm being cylindric only flattened a little on one side. The leaves are covered with a soft woolliness on the upper side barely perceptible to the naked eye. Culms smooth, but within the panicle rough; green, but when the seeds are ripe, red^h. It differs from *F. duriuscula* in having the stem-leaves broader and flat, the spikelets a little larger, and the panicle looser: from *F. myurus*, in having the root-leaves bristle-shaped, and very short awnsⁱ.

Culm eight inches high (from two inches to two feet); stem-leaves one or two; spikelets four, five, or six-flowered^k.

According to Monf. Villars, the stiff hard leaves, those of the stem like those next the root, fine and of a shining green, with the brownish red shining colour of the flowers, distinguish this from the innumerable varieties of some other species. The glumes of the corolla are shining and smooth.

^d Withering.

^e Hudson.

^f Lyons fascic.

^g Curtis's practical observations.

^h Linn.

ⁱ Pollich.

^k Lyons fascic.

High heaths and dry pastures, flowering in July. Perennial.

4. This is probably nothing more than a variety. Haller makes it a variety of *F. ovina*.

Monf. Villars allows, that it differs little from *F. ovina*, but that the leaves are of a darker green, the panicles red, and the spikelets a little wider than in *F. rubra*.

He has a species, which he calls *F. heterophylla*; and says it differs from this in having the stem-leaves wider, and the root-leaves narrower; the spikelets smaller not coloured, the culm and awn as long again:—from *F. ovina* in having higher culms, wider leaves, thinner and greener spikelets, and longer awns. He says it is very common about Paris, and refers to Haller n. 1438. as a synonym.

5. Root perennial, the thickness of a goose-quill, creeping very far under ground, covered with broad rudiments of leaves. Culm more than a foot and half in height. Leaves involute-filiform. Panicle oblong, with alternate very simple branches, pointing one way; spikelets alternate, very many, lanceolate, six-flowered, acuminate, awnless.

Native of Arabia and Palæstine^l.

6. Root perennial. Culm twelve or eighteen inches in height. Leaves smooth. Branches of the panicle alternate, (mostly in pairs, *Huds.*) Spikelets peduncled, linear, compressed, six-flowered, ascending^m.

It agrees with the next species in having filiform, channelled root-leaves, and flat stem-leaves, but the glumes of this are smoothⁿ.—This is easily distinguished from *F. rubra* by having both root and stem-leaves bristle-shaped, small ovate spikelets with very short awns, and a more contracted panicle: from *F. ovina* by the roundness of the culm, and the spikelets constantly ending in a very short awn^o.—According to Hudson, it varies with bristle-form and filiform roughish root-leaves; flat and channelled naked stem-leaves; with from four to ten flowers in a spikelet, which are either smooth or pubescent. But he makes the next species to be a variety of this.

In dry pastures, flowering in June.

It is early and productive; from these circumstances, and its natural place of growth, it appears to be a proper grass for sheep pastures. It varies much in size and breadth of leaf, as well as colour of its panicle, but in all situations is very distinct from the *ovina*^p. All these grasses form an admirable pasture for sheep, and seem to flourish most when they are bit the closest, but in general they are not productive.

Monf. Villars has a species which he calls *F. cinerea*. It resembles *F. ovina* in its characters, but the leaves are hard, stiff, thick, turned obliquely, but little raised, forming a turf of some inches in diameter; the panicles are somewhat ash-coloured, but less so than the leaves, the spikelets are almost turned to one side, and are villose; the outer valve of the corolla ends in an awn scarcely one-third of the length of the valve. It differs from this species in its villose glumes terminated by an awn, whereas in the *duriuscula* they are smooth, without any visible awn.

7. Culms a foot or eighteen inches in height, filiform, cylindric, with two swelling knots. Root-leaves a foot long, cylindric, scarcely ancipital; stem-leaves shorter, channelled. Panicle small: spikelets ten or twelve oblong, pubescent, hoary; the lower ones in pairs, pedicelled: the upper ones sessile, solitary. Glumes terminating in a minute awn. Bulbs often produced within the sheaths of the culm. Very nearly allied to *F. duriuscula*^q.

In woods and hedges, flowering in June and July.

8. Leaves from a foot to eighteen inches long. Panicle condensed, from a span to a foot in length: spikelets green and purple, cylindric, distich: awn the length of the glume^r, but more frequently none.

^l Linn. spec.

^m Lyons fascic.

ⁿ Linn.

^o Pollich.

^p Curtis.

^q Linn.

^r Lyons fascic.

Florets about eight. Calycine glumes unequal, acuminate; of the corolla nearly equal, pointed, the outer a little larger and longer, the inner often bifid^a.

Hudson who joins the *Meadow* with the *Flote-Fescue*, doubts whether this be a distinct species, since it has so many things in common with them.—Curtis, though he allows it to be very similar, yet asserts it to be specifically different.

It grows in large tufts, and is conspicuous by the breadth of its leaves, the height of its stems, and the drooping of its panicle at least before it flowers. In very luxuriant spots the leaves are sometimes half an inch wide; but in general this grass varies little except in size, and sometimes in having awns.

It is found in moist meadows, and woods, but most frequently in wet situations, as by river sides and in other grounds; flowering in June and July, and is perennial^c.

Linneus affirms that it makes very excellent feed, but that it is luxuriant only in a rich soil: but this is spoken of our *F. pratensis*, which he names *elatior* in *Fl. suec.*—Curtis asserts that it grows to a great height in marshes, is hardy and very productive, but too harsh and coarse for hay, yet that it may perhaps be a good grass for soils which cannot be drained of their too great moisture, or which are apt to be overflowed.

9. Culms aggregate, cylindric, a foot or eighteen inches in height. Panicle directed to one side, branched but not diffused, linear and often a span in length, bending a little but not nodding. Spikelets subsessile, linear, with five floscules in each, (five to eight, *Leers*): glumes very unequal, awns longer than the spikelets^b; according to Haller, growing from below the tip.

On walls and in barren places, flowering in June. It is annual, and is called Capon's-tail Grass.—First observed by Mr. Goodyer on the walls of Winchester^x.

10. Root perennial. Culms three feet high, erect, strict, round, striated, very smooth, with one or two purple joints. Leaves involute-setaceous, strict, very smooth, striated, mucronate-pungent, glaucous, widened into a membrane at the base, sheathing, whitish. Stipules intrafoliaceous, very short, or none. Panicle branched, loose, of a golden-bay or bronze colour, with the branches commonly in pairs. Peduncles angular, subflexuose, erect. Spikelets compressed, usually four-flowered, smooth. Calycine valves almost equal, keeled, acuminate not awned, membranaceous and pellucid at the edge, brown at the base. Valves of the corolla longer, acuminate, one larger, keeled, embracing the other. Anthers purplish, included. Styles very short. Seed brown. The panicle is more or less branched.

Linneus seems to have referred this grass to the genus *Anthoxanthum*, merely from the habit, and the colour of its flowers; but they are clearly triandrous.

Dr. Smith, whose sagacity and attention in developing this species are eminently conspicuous, informs us that he has learnt from Savoy, that this grass is likely to become of considerable use, and that large quantities of it are now in cultivation^y.

Native of the South of France, Switzerland, &c. Found on Mont Cenis by Dr. Smith in 1787, and cultivated, from the seeds which he brought over, by Mr. Fairbairn, in the botanic garden at Chelsea, in 1788^z.

11. Root creeping. Culms two feet high, and upwards, straight, branched at the base. Spike from two inches to a foot and more in length: spikelets remote, two inches long, sharpish, from six to eight-flowered. Leaves glaucous, smooth, convoluted, sharp and rigid at the end. Glumes mucronate. Perennial.—Native of the sandy shores of Provence^a.

12. Culm lofty, branched. Leaves from broadish sheaths, narrow, longitudinally involute, long, subulate. Panicle subdivided; spikelets upright, an inch in length, obscure, with sixteen to twenty-four floscules.—Native of Palæstine^b.

F. fusca of Villars (98. n. 7.) may perhaps be our *spadicea*.

13. Root perennial. Culms from a foot to eighteen inches in length, (in dry situations not more than a span, according to Krockner) somewhat bulbous at the base, having three knots, lying on the ground, but when in flower ascending obliquely. Root-leaves narrowish, flat, hairy on the upper surface, especially at the base: stem-leaves the same, only shorter; sheaths villose above. Panicle very simple; peduncles alternate, simple, short, one-flowered, the lowest longer and on a single branchlet two-flowered. Spikelets five to seven, ovate, somewhat swelling, upright, three, four, and sometimes five-flowered (three, *Lin.*—three to six, *Weber.*—eight, four of which are perfect and four imperfect, *Haller*) coloured (purple or green, *Lyons*). Outer valve of the calyx frequently longer than the spikelet; inner shorter and narrower. Floscules hairy at the base; outer valve five-nerved, ciliate about the edge, obtuse at the end and trifid; inner flat, bifid and often trifid at the end. Nectaries two, obtuse. The extreme floscule is barren^c. Allied to the genus *Melica*^d.

On barren pastures, both dry and wet; frequent on moorish ground. It flowers in July and August.

14. Culm round, streaked, upright, two feet high. Leaves linear, streaked, with very fine villose hairs, especially on the sheaths. Panicle ample, and spreading very much: peduncles capillary, flexuose, streaked, scabrous; pedicels less spreading. Calyxes marked with lines, lanceolate, with long awns.

Native of Japan^e.

15. Root perennial, striking deep into mud. Culm from one to three feet in length (or even much longer in water), creeping at bottom, and sending forth young shoots, afterwards nearly upright; covered with the sheaths of the leaves as far as the panicle. Leaves broadish and smooth; those of the young shoots upright, keel-shaped, and shortish; those of the stem longer, flattish, weak, and hanging down, in the winter season lying flat on the water. Panicle long (often more than a foot in length) generally bending down a little, sometimes forming a kind of spike, but most commonly branched; the branches sometimes pressed to the culm, sometimes diverging from it. Spikelets cylindric, slender, an inch or an inch and half long, from nine to twelve-flowered, (seven to eleven, *Leers*) pressed to the stalk. Valves of the corolla equal in length, the lower nerved, the nerves towards the top frequently coloured, at top membranous, rather blunt, with uneven points; the upper valve more pointed, flat and bifid. Nectary a small heart-shaped gland resembling a scale, placed horizontally at the bottom of the germ. Stigmas very much branched; but the styles not feathered to the germ, as in Schreber's figure and in the *Flora Danica*. Seed shining, olive-coloured, with two little horns; and naked.—When it has nearly done flowering, the branches of the panicle generally project from the main stalk in an acute angle. In every situation, the spikelets are always pressed close to the stalk or branches of the panicle: this circumstance, joined to the length and roundness of the spikelets, sufficiently characterizes this species: which being common in ditches, watery places, and slow streams; flowering all the summer; and having the parts of fructification beautiful and large enough to be distinctly discerned by the naked eye, without the trouble of dissection, is peculiarly proper for the investigation of the student^f.

It appears that horses, kine and hogs are fond of this grass. Mr. Stillingfleet informs us, that hav-

^a Curtis. ^c Curt. lond. ^b Lyons fasc. ^x Ger. emac.

^y Linn. trans. 1. 111. & 2. 101.

^z Id. 1. 112, 114.

^a Linn. mant. and Ger. prov.

^b Linn. spec.

^c Leers.

^d Linn.

^e Thunberg.

^f Curtis.

ing been told of a field of four acres, always under water, maintaining five farm horses in good heart from april to the end of harvest, without any other food; he obtained some of the grass, and found it to be the *flote-fescue*, with a mixture of marsh-bent. Cows in spring are frequently enticed into bogs, by endeavouring to get at the sweet young shoots of this grass, which appear earlier than those of most other grasses. Professor Kalm, observing that swine go a great way into the water after the *flote-fescue*, and that they eat the leaves with great eagerness; had small bundles of it gathered, and dried for hay, which they devoured with great eagerness: hence he concludes that wet and swampy places might be rendered useful by cultivating this grass. It has been recommended to be sowed on meadows that admit flooding: but Mr. Curtis justly remarks, that the *flote-fescue* will not flourish, except on land that is constantly under water, or converted into a bog or swamp.

The seeds are small, but very sweet and nourishing. They are collected in several parts of Germany and Poland, under the name of Manna-seeds (*Schwaden*), and are esteemed a delicacy in soups and gruels. When ground to meal, they make bread very little inferior to that from wheat. The bran is given to horses that have the worms; but they must be kept from water for some hours afterwards.—Geese and other water-fowl, are very fond of the seeds². So also are fish; trout in particular thrive in those rivers where this grass grows in plenty.

Schreber informs us, that the seeds are collected not only from this grass, but also from *Panicum sanguinale*, or *Cock's-foot Panic Grass*, which is cultivated in several parts of Germany for this purpose. The common method of gathering and preparing them is as follows. At sun-rise they are gathered or beaten from the dewy grass into a horse-hair sieve, spread on a sheet; and are dried for a fortnight in the sun: they are then beaten gently with a wooden pestle in a wooden trough or mortar, with straw laid between them and the pestle, till the chaff comes off, and then they are winnowed. After this, they are again put into the mortar or trough, in rows, with dried Marygold flowers, apple and hazel leaves, and pounded till they appear bright; they are then winnowed again, and being made perfectly clean by this last process are fit for use. The Marygolds are added to give the seeds a finer colour. The most proper time for collecting this seed is in july. A bushel of seed with the chaff yields only about two quarts of clean seed.

Mr. Curtis has observed a disorder in the ear of this grass, similar to that which has been noticed by the French in Rie, and called by them *Ergot*.

What Mr. Hudson distinguished in the first edition of his Flora, under the name of *F. loliacea*, he afterwards supposed to be only a variety, from a dry soil acquiring acuminate glumes to the floscules. He also asserted that *flote-fescue* sown in a garden will become *F. loliacea*. In this however he seems to have been mistaken, *F. loliacea* being either a distinct species, or else a variety of *F. pratensis*, which is always very different from *F. fluitans* or *Flote Fescue*; a variety of which frequently occurs on dry land, that may easily be distinguished from *F. pratensis*³: it is in every respect less, and the panicle is often changed to a simple spike¹.

16. *Meadow Fescue-Grass* differs from *elator* n. 8. with which it has frequently been confounded, in having only half the height or little more, the leaves only half the breadth, the panicle shorter and containing about half the number of flowers; the panicle is but once branched, droops but slightly, leans to one side when in flower, and the flowers all grow one way: in the *elator* the panicle branches twice, it droops greatly at first, and the flowers grow much more loosely, the spikelets are more round, ovate and pointed, whereas in *pratensis* they

are somewhat flat, linear and obtuse. This also is more common and less local than the *elator*, is found more dispersed in open meadows, and does not form such large tufts. They differ a fortnight or three weeks in their time of flowering⁴.

Mr. Hudson, who in the first edition of his Flora Anglica gave this as a distinct species, affirmed afterwards that the *Flote-fescue* sown in a garden, and becoming *F. loliacea* or *Darnel-Fescue*, the first year; will, in the second, become this grass; than which nothing can be much more improbable. Mr. Curtis, who has cultivated it, recommends it among the six Grasses, which he prefers before all others, and particularly for land either moist or moderately dry. This, he says, comes nearest in its appearance to Ray-grass (*Lolium perenne*), to which however it seems in many respects greatly superior, at least for the purpose of forming or improving meadows: it is larger, and more productive of foliage, is strictly perennial, very hardy, is found in all situations, from the sand-pits at Charlton, to the oser-grounds at Battersea, and abounds in the very best meadows about London: in short there is no grass more likely to supply the deficiencies complained of in Ray-grass. One quality it has, which bids fair to introduce it quickly into general use; it produces more seeds than any of the others, which are easily gathered, and readily grow. In one respect, it is inferior to *Vernal meadow Fox-tail*, and *smooth-stalked Meadow-grass* (*Poa pratensis*); it does not produce its flowering stems earlier than about the middle of june, a fortnight or three weeks later than *meadow Fox-tail Grass*; yet it cannot be considered as a late grass, for most of the *Agrostis* genus, and *meadow Cat's-tail Grass* (*Phleum pratense*) flower at least three weeks later. It must be carefully distinguished from *F. elator* (n. 8), which is very similar, but much coarser.

17. Culms many, scarcely the length of a finger. Panicle resembling a spike, almost ovate, differing from *Aira cristata* in having more floscules, and those hirsute, the culm also is shorter; but it approaches that grass in its appearance.—Native of Portugal, on barren hills¹.

18. Root annual. Root-leaves collected into a tuft. Culms filiform, narrow, of a finger's length. Panicle attenuated. Calyx the length of the spikelet^m.

According to Cavanilles, who observed it near Madrid, a short fibrous root produces slender culms from four to six inches in height, somewhat prostrate at the base, but from the first joint upright; joints purple. Leaves short, acute, bearded at the tip of the sheath. Panicle contracted, hardly an inch long. Calycine valves ovate-acute, keeled, rigid, striated, with a scarious white border, the length of the spikelet. Valves of the corolla awnless; the outer ovate, striated, white and scarious at the tip, including the inner. The genitals so minute as not to be visible to the naked eye.

Native of Spain. Flowering there in may; here in june and july. It was introduced in 1781, by Mons. Thouinⁿ.

19. Culm lying on the ground, erect at top, a foot and half in height. Leaves ensiform, smooth, a finger's length. Panicle resembling a spike, mostly pointing one way, smooth, a finger's length. Calycine glumes containing few flowers.

Native of Japan^o.

20. Culms perennial, the size of a pigeon's quill feather, solid, proliferous; the branches crowded, upright, simple, thorny at the end. Leaves with dilated sheaths, ending in an awl-shaped, pungent, very short leaf. Branches round, leafless; branchlets alternate, horizontal, very simple, an inch long, dagger-pointed and thorny, flat above, roundish underneath, pungent-thorny, on both edges; spikelets four to six formed from the peduncles. Flowers distich. Spikelets somewhat oblong, containing seven to ten floscules, not very closely approximating,

² Withering and Linn. succ.

³ Woodw. Mss.

¹ Curtis.

⁴ Curtis.

⁵ Linn. spec.

^m Ibid.

ⁿ Hort. kew.

^o Thunberg.

scarcely acute. *Peduncle* of the spike adhering; the branchlets after the peduncles fall changing into a spinule.—Native of the Cape of Good Hope^p.

21. *Root* annual. *Culms* many from six inches to a foot in height, oblique, round, smooth, somewhat branched. *Leaves* petioled, somewhat involute, sharp, naked, much shorter than the petiole, which is sheathing, ventricose and naked. *Stipule* membranaceous somewhat obtuse. *Spikelets* peduncled, linear, with from four to eight flowers. *Peduncles* short, thickening, scabrous. *Glume* one-valved, linear, concave, awned. *Corolla* the outer valve larger, linear, keeled, awned, scabrous; inner shorter, linear, flat, awnless. *Awn* twice as long as the *hospule*.

Sea coast, in loose sand; flowering in may and june^q. Found by Dr. Sherard in Jersey, by Mr. Dale in Mersey island, and by Dillénus on the coast of Suffex^r.

22. *Root* perennial. *Culm* about a foot in height, oblique, round, leafy, smooth, having two or three joints. *Root-leaves* somewhat erect, ensiform, sharpish, channelled: *stem-leaves* two or three, petioled, sharpish, nerved. *Petiole* sheathing, cylindric, streaked, hirsute. *Stipule* membranaceous, sheathing, obtuse. *Panicle* somewhat condensed, branched at the base. *Spikelets* peduncled, with about six flowers, ovate, subulate-awned, smooth; the awn short. *Peduncles* almost the length of the spikelet.—Allied to *F. durinacula*.

On the highest mountains about Llanberis, in Wales, plentifully. It flowers in july and august^o.

23. This species has the appearance of a *Poa*. *Culms* three feet high and more, the thickness of a pigeon's quill, streaked, leafy. *Leaves* linear, the sheaths swelling at the base. *Panicle* half a foot in length; the branches simple. *Spikelets* six to eight-flowered, small, alternate, with short pedicels. *Calyx* the outer valve larger, keeled; the inner smaller, flat. *Corolla* glumes nearly equal, smooth, the nerve of the outer usually ending in a short awn.—It is distinguished from far by its blueish-green colour. One half of the panicle flowers and expands, then contracts whilst the other half flowers.—Native of Tranquebar in the East Indies, in the rice-grounds; with erect culms in flooded lands, and decumbent ones in dry places^t.

24. This grass is a foot and half high, or more, with a round, smooth, striated culm, and involuted leaves. *Panicle* a long span in length, upright; the lower branches subdivided. *Spikelets* lanceolate. *Calyx* glumes smooth. Outer valves of the corolla rugged, acute, villose when viewed by a magnifier.

Native of the Cape of Good Hope, whence it was sent by Bulow.

25. *Culm* creeping. Branches erect, divided at top commonly into four divaricated branchlets, a span long, and the thickness of a pigeon's quill: the internodes an inch in length. *Leaves* alternate, in two rows, spreading very much, pungent, very smooth, very finely streaked. Sheaths twice as long as the joints, covering the culm, broader than the leaves, ciliate, bearded at the throat on each side; without any ligule or strap. *Spike* compound, sessile, terminating, half an inch long. *Rachis* pubescent. *Spikelets* twelve, alternate, glomerate. *Calyx* from six to eight-flowered: valves oblong, concave, smooth, keeled, awnless, one narrower than the other. Outer valve of the corolla ovate, concave, mucronate, hyaline, with three elevated green lines, slightly ferrulate at the tip, hairy on the outside, especially at the base and towards the edge: inner valve narrower, flat, the sides bent in, hairy, with a green line on both sides at the edge^u.

26. In deference to the judgement of Mr. Curtis, who has bestowed so much laudable attention on this useful tribe of Grasses, the *Darnel Fescue*-grass is here given as a distinct species, though Mr. Hud-

son regarded it as a variety of the *fluviatilis*, and others of the *pratensis*^x.

In root, stalk, leaves and habit it comes so near *Lolium perenne* (or common Ray-grass) as scarcely to be distinguished from it, but it is usually higher by about one-third; the flowers in general grow in a simple spike, from eight inches to a foot in length, bending a little towards the top; the spikelets are sessile, near an inch long, diverging from and for the most part placed obliquely to the rachis, sometimes on peduncles of different lengths, the lowermost about an inch long, nearly round, flattened a little on the sides, running out to a point; the uppermost shorter and somewhat broader, containing from ten to fifteen flowers; calyxine valves unequal in size, the innermost frequently small, lateral, and sometimes wanting.

The spike is not unfrequently branched; then it approaches nearer to *F. pratensis*, but may be distinguished from it, by the length of its spiked panicle; most commonly the branches grow from the base of the spike, sometimes from the middle, but sometimes the spikelets are shorter, and two or three grow together from the same point: when the spikelets are shorter and broader than usual, it resembles *Lolium perenne* so much, as frequently to be taken for the same; and may be considered indeed as forming the connecting link between that genus and this. In this state however it may be distinguished, 1. By the spikelets being placed obliquely to the rachis, whereas in the *Lolium* their edge is parallel with it, which gives the spike a flat appearance. 2. *Lolium* never has more than one valve to the calyx, which is strong and usually two-thirds of the length of the spikelet; whereas in this there are usually two calyxine valves, though the inner valve is often very small, imperfect, and sometimes wanting altogether; but it rarely happens that it is deficient in all the spikelets. 3. The outer valve of the calyx is rarely more than one-third of the length of the spikelet.

It is found plentifully in moist fertile meadows, and flowers about the same time with the *pratensis*. It is a hardy perennial of very quick growth, producing a crop somewhat similar to Ray-grass, but larger, and succeeding best in a moist soil; it is however harsh and stalky. This and the elatior do not seem to produce seeds, in a state of cultivation at least^v. May not this circumstance arise from their running much at the root?

PROPAGATION AND CULTURE.

See GRASS.

FESTUCA. See *Ægilops*, *Agrostis*, *Andropogon*, *Avena*, *Bromus*, *Dactylis*, *Poa*, *Stipa*, *Triticum*.

FEVERFEW. See *Matricaria*.

FEVER ROOT. See *Triostium*.

FEUILLEA. (So named in honour of Louis Feuillée, a French Franciscan monk, who travelled into Peru. *Journal de Perou* 1714 & 1725.)

Lin. gen. n. 1118. Reich. 1223. Schreb. 1525.

Juss. 397. Nhandiroba. Plum. 27.

Class. 22. 5. Dioecia Pentandria.

Nat. order of *Cucurbitaceæ*.

GENERIC CHARACTER.

Male.

CAL. *Perianth* bell-shaped, one-leafed, half-five-cleft, rounded at bottom, spreading at top.

COR. one-petalled, wheel-shaped: border half-five-cleft; divisions convex, rounded; navel closed with a double little star, respecting the sun's motion, the rays alternately longer and shorter.

STAM. *Filaments* five, subulate. *Anthers* twin, roundish. *Neetary* consists of five, compressed threads bent in, and alternate with the stamens.

Female.

CAL. *Perianth* as in the male, but with a germ at the base.

COR. as in the male: the star of the navel is formed of five heart-shaped plates.

^p Linn. suppl.

^q Hudson.

^r Ray syn.

^s Hudson.

^t Retz.

^u Vahl.

^x See n. 15 and 16.

^v Curtis lond.

PIST. Germ inferior. *Styles* three or five, filiform. *Stigmas* heart-shaped.

PER. Berry, or rather Pome, very large, fleshy, with a hard skin, ovate, obtuse, surrounded with the calyx. **SEEDS** compressed, orbicular nuts.

ESSENTIAL CHARACTER.

MALE. Cal. five-cleft. Cor. five-cleft. Stam. five. Nect. five converging filaments:

FEM. Cal. five-cleft. Styles three. Pome hard, three-celled, corticose.

SPECIES.

1. *Feuillea trilobata*:

Lin. syst. 886. *Reich.* 4. 253.

Trichosanthes punctata. Lin. spec. 1432. *amæn.* 3. 423.

Leaves lobed, dotted underneath.

2. *Feuillea cordifolia*:

Lin. syst. 887. *Reich.* 253. *Brown. jam.* 374.

Swartz obs. 377.

Leaves heart-shaped, angular.

DESCRIPTIONS, &c.

These are climbing herbs, with alternate leaves, heart-shaped or three-lobed, cirrhose in the axils; the peduncles are axillary, sustaining one or many small flowers. It is doubtful whether these be really monopetalous, or rather apetalous, with the inner calyx coloured, as in other cucurbitaceous plants, to which this genus is nearly allied. The star which closes the opening of the male flower is probably the triple permanent style of an abortive germ. There are ten distinct filaments alternately fertile and barren. The star in the female flower, is perhaps made up of abortive stamens. The fruit is a berry, half inferior, spherical, scored round with a circular vestige of the border of the calyx: it is three-celled, and contains many seeds, which are large, and covered with a corky crust; the heart is large, without any perisperm.

1. Stem angular, the thickness of a thread. Leaves petioled, cordate, five-parted, naked, the upper surface rugged, but the lower is so only on the veins: middle lobes dilated three-lobed, lateral ones shorter, blunter, two-lobed; all punched beneath with honey pores. At the axils of the leaves are tendrils and bulbs. Native of the East-Indies.

2. Stem suffrutescent at bottom, divided at top, with herbaceous branches, (as in the three-lobed) climbing frequently to the tops of trees, roundish, and very smooth. Leaves petioled, alternate, usually cordate, when more adult cordate-lobed, the lower ones three-lobed, the lobes angular, thick, nerved, very smooth on both sides. Flowers racemed, dusky yellow.

Racemes in the male, divaricating, loose; the subdivisions almost upright, alternate, many-flowered; flowers pedicelled. Calyx five-parted; the parts convex, spreading, ovate, dusky. Filaments converging at the base, reflex, club-shaped, gibbous, with a sort of head at the end, to which the anthers are fastened: these are ovate, open longitudinally in the middle, and are whitish. The five other threads forming the nectary are yellow. The fruit is a globular, corticose, hard, many-seeded pome. The nuts are orbicular, compressed, rugged and ferruginous, inclosing a very white kernel. The whole plant is very bitter. There is a remarkable analogy between the fruit of this plant and *Faba Ignatii*.

It is frequent in the inland parts of Jamaica, and is generally found climbing among the tallest trees in the woods. The seeds are very oily, and often burnt by the negroes instead of candles. The kernels are extremely bitter, and commonly infused in rum for the use of the negroes: a small quantity of this liquor opens the body and provokes an appetite, but a larger dose works both by stool and vomit. It is frequently taken when there is any suspicion of poison, and often on other occasions.

Browne calls it the Antidote Cocoon.

* Jussieu.

b Linn. amæn.
c Browne.

* Swartz.

The first species is a native of the East-Indies; but it is doubtful whether they be distinct. Swartz affirms, that they are not so much as varieties.

FICARIA. See *Ranunculus*.

FICOIDEA. See *Aizoon*.]

FICOIDES. See *Aizoon*, *Cactus*, *Crassula*, & *Mesembryanthemum*.

FICUS. (Some derive it from *foecundus*, others from the Greek *φυκν* or *φυκας*, others again from the Hebrew *fag*.)

Engl. Fig-tree.

Fr. Figuier.

Lin. gen. n. 1168. *Reich. n.* 1283. *Schreb. n.*

1613. *Tournef. t.* 420. *Hire aët. gall.* 1712.

t. 15. *Ponted. anth.* 11: *f.* 10. *Juss.* 400:

Gærtn. t. 91. & 179.—*Caprificus. Pont. ibid.*

Class. 23. 3. *Polygamia Trioecia.*

Nat. order of Scabridæ.—Urticæ. Juss.

GENERIC CHARACTER.

CAL. common obovate, very large, fleshy, concave; closed with very many semilanceolate, sharp, serrate, inflex scales. The inner surface is covered with *floscules*, the outer of which, or those which are nearer to the edge of the calyx, are male; these are fewer in number: the rest, lower down, are female, and more numerous.

Male, each on its proper peduncle.

CAL. *Perianth proper* three-parted, erect (bell-shaped, trifid. G.): *divisions* lanceolate, erect, equal.

COR. none.

STAM. *Filaments* three, bristle-shaped, length of the calyx. *Anthers* twin.

PIST. *Rudiments* caducous, intorted.

Female, each on its proper peduncle.

CAL. *Perianth proper* five-parted (bell-shaped, quinquefid. G.): *divisions* lanceolate-acuminate, straight, nearly equal.

COR. none.

PIST. Germ (half-inferior, G.) oval, the size of the proper perianth. Style subulate (bristle-shaped, G.), inflex, coming out from the germ at the side of the tip. *Stigmas* two, acuminate, reflex; one shorter than the other.

PER. none. Calyx oblique, containing in its bosom a seed, larger?

SEED single, roundish, compressed.

Obs. *Caprificus comprehends within a common calyx only male flowers within a distinct plant.*

Erinosyce has some flowers compound male, others female, on a distinct plant.

ESSENTIAL CHARACTER.

Receptacle common turbinate, fleshy, converging, concealing the *floscules*, either on the same or a distinct individual.

MALE. Cal. three-parted. Cor. none. Stam. three.

FEM. Cal. five-parted. Cor. none. Pist. one. Seed one.

SPECIES.

1. *Ficus Carica.* Common Fig-tree.

Lin. spec. 1513. *Reich.* 4. 364. *hort. cliff.* 471.

upf. 305. *mat. med.* 223. *amæn.* 1. 24. *Gouan*

monsp. 521. *Hall. herb. n.* 1607. *Scop. carn.*

n. 1251. *Pallas ross.* 1. 2. 44. *Gærtn. fruct.*

2. 66. *Blackw. t.* 125. *Mill. illustr.* *Ebret.*

dec. t. 73, 74. *Dubam. arb.* 1. 218. *f.* 1, 2.

Woodv. med. bot. 354. *t.* 130. *Lour. cochinch.*

664. *Thunb. monogr. n.* 26.

Ficus. Dod. pempt. 812. *Ger.* 1327. *emac.* 1510.

Bauh. hist. 1. 128. *Raii hist.* 1431.—*communis.*

Bauh. pin. 457.—*vulgaris. Park. theat.* 1493.

t. 1494. *f.* 1. *parad.* 566.—*fativa. Fuchs. hist.*

754. *t.* 755.

α. *Caprificus. Bauh. hist.* 1. 134. *f.* 128. *F. syl-*

vestris. Bauh. pin. 457. *Raii hist.* 1433. 2.

β. *F. humilis. Bauh. pin.* 457.

Chamæficus. Bauh. hist. 1. 128. *f.* 2. *Ger. emac.*

1510. *f.* 2. *Park. theat.* 1494. *f.* 2. *n.* 4.

Leaves palmate-subtrilobate, rugged underneath, fruits

smooth, pear-shaped, umbilicated.

2. *Ficus Sycomorus.* Egyptian Fig-tree or Sycomore.

Lin. spec. 1513. *syst.* 921. *amæn.* 1. 26. *n.* 3.

Lour. cochinch. 664. *Hasselqu. itin.* 495. *edit.*

engl. 259. *Gron. orient.* 329. *Pluk. phyt. t.*

178. *f.* 3. *Burm. ind.* 225.

- Ficus cypria*. Rauw. itin. t. 57. Baub. hist. 1. 124. f. 3. Park. theat. 1492. 2. 1493. f. 2. Raii hist. 1439. 2. Lin. amæn. 1. 27. n. 4.
- F. fol. Mori*, fructum in caudice ferens. Baub. pin. 459. Raii hist. 1439.
- Sycomorus*. Baub. hist. 1. 124. Cam. epit. 180. Lob. ic. 197. Ger. 1326. emac. 1509. (not the fig.) Park. theat. 1492. 1493. f. 1.
- Leaves cordate, roundish, quite entire, tomentose underneath, fruits sessile.
- Ficus nymphæifolia*. Water-lily-leaved Fig-tree. Lin. syst. 921. Reich. 365. mant. 305. hort. cliff. 471. n. 3.
- F. nymphoides*. Thunb. Ficus n. 2.
- Leaves ovate, cordate, mucronate, quite entire, smooth, glaucous underneath.
4. *Ficus religiosa*. Poplar-leaved Fig-tree. Lin. spec. 1514. Reich. 365. mant. 504. hort. cliff. 471. amæn. 1. 30. n. 16. Thunb. mon. n. 3. Gærtn. fruct. 2. 484. Lour. cochinch. 665. Pluk. alm. t. 178. f. 2. Rheed. mal. 1. 47. t. 27. Raii hist. 1434.
- Leaves ovate, cordate, cuspidate, smooth, fruits sessile.
- [5. *Ficus benamina*. Oval-leaved Fig-tree. Lin. syst. 921. Reich. 366. mant. 129. 519. Thunb. mon. n. 15. Lour. cochinch. 665. Pluk. alm. t. 243. f. 4. Rheed. mal. 1. 45. t. 26. Rumph. amb. 3. 139. t. 90.
- F. microcarpa*. Lin. syst. 922. see n. 23.
- Leaves elliptic, obtuse, smooth, fruits acute, sessile.]
6. *Ficus bengalensis*. Bengal Fig-tree. Lin. spec. 1514. Reich. 366. hort. cliff. 471. amæn. 1. 29. Lour. cochinch. 665. Thunb. monogr. n. 5. Trew. ehr. t. 50. Pluk. phyt. t. 178. f. 1. Comm. hort. 1. t. 62. Rheed. mal. 1. 49. t. 28.
- F. vatta*. Forsk. descr. 179.
- Leaves ovate, cordate, quite entire, smooth, blunt, coriaceous, stem arboreous, erect.
- [7. *Ficus pedunculata*. Willow-leaved Fig-tree. Ait. hort. kew. 3. 450. Pluk. alm. t. 178. f. 4.
- Leaves ovate-oblong, cordate, quite entire, sharp, smooth, fruits globular, peduncles in pairs, elongated.
8. *Ficus lucida*. Shining-leaved Fig-tree. Ait. hort. kew. 3. 451.
- Leaves ovate, cordate, quite entire, smooth, blunt, three-nerved at the base, branches upright.]
9. *Ficus indica*. Indian Fig-tree. Lin. spec. 1514. α. Reich. 366. amæn. 1. 27. n. 6. Thunb. mon. n. 20. Lour. cochinch. 665. Baub. pin. 457. n. 8. Tabern. hist. 1370. Rheed. mal. 3. 73. t. 57. Raii hist. 1437. n. 4. Baub. hist. 1. 145. Ger. 1331. emac. 1514. Park. theat. 1499.
- Leaves oblong, rounded at the base, smooth and even, quite entire, somewhat glaucous underneath, impressed with dots above, fruits almost globular.
10. *Ficus virens*. Round-fruited Fig-tree. Ait. hort. kew. 3. 451. Sloan. jam. 2. 140. t. 223. Raii dendr. 16. 5. Brown. jam. 110. n. 5? Lin. amoen. 1. 28. n. 14.
- F. indica*. β. Lin. spec. 1514.
- F. maxima*. Mill. diet. n. 6.—& *citrifolia*, n. 10?
- Leaves oblong, acuminate, quite entire, smooth and even, narrowed and rounded at the base.
- [11. *Ficus venosa*. Waved-leaved Fig-tree. Ait. hort. kew. 3. 451. Rheed. malab. 3. 87. t. 64.
- Leaves ovate, somewhat cordate, sharp, quite entire, smooth and even, impressed with dots on the upper surface.
12. *Ficus costata*. Upright heart-leaved Fig-tree. Ait. hort. kew. 3. 452.
- Leaves ovate, cordate, with a deep narrow sinus; quite entire, smooth, sharp, green on both sides.]
13. *Ficus racemosa*. Red-wooded Fig-tree. Lin. spec. 1515. syst. 922. Reich. 367. amæn. 1. 30. n. 17. Thunb. mon. n. 17. Rheed. mal. 1. 43. t. 25. Raii hist. 1434. 1.
- Leaves ovate, quite entire, sharp, impressed with dots; stem arboreous.
- [14. *Ficus pertusa*. Laurel-leaved Fig-tree. Lin. syst. 922. suppl. 442. Thunb. monogr. n. 13. Rheed. mal. 3. t. 56?
- Leaves ovate, smooth, calyxes bifid, berries globular, umbilicated with a hole.
15. *Ficus retusa*. Blunt-leaved Fig. Lin. syst. 922. Reich. 367. mant. 129. Thunb. mon. n. 18.
- Leaves obovate-oblong, extremely obtuse, branches angular, fruits sessile.]
16. *Ficus pumila*. Lin. spec. 1515. Reich. 368. amæn. 1. 30. n. 15. Thunb. monogr. 10. jap. 33. Kämpf. amæn. 803. (Itabu.) Lour. cochinch. 667? Burm. ind. 226.
- Leaves oblong-ovate, blunt, smooth, netted underneath, stem decumbent, fruits peduncled.
- [17. *Ficus toxicaria*. Lin. syst. 922. Reich. 368. mant. 305.
- F. toxica*. Thunb. monogr. n. 27.
- F. padana*. Burm. ind. 226.
- Leaves cordate-ovate, somewhat toothletted, tomentose underneath.
18. *Ficus maculata*. Lin. spec. 1515. Reich. 368. Lour. cochinch. 666. Plum. spec. 21. ic. 131. f. 1. Burm. ind. 226. (see n. 20.)
- Leaves oblong, acuminate, serrate.
19. *Ficus trigona*. Lin. syst. 922. suppl. 441. Thunb. monogr. n. 12. Plum. ic. 123. t. 132. f. 1.
- Leaves elliptic, calyxes bifid, berries with a triangular navel.
20. *Ficus hispida*. Lin. syst. 922. suppl. 442. Thunb. monogr. n. 24.
- Leaves oblong, petioled, sharp, fruits strigose-hispid.
21. *Ficus stipulata*. Trailing Fig-tree. Ait. hort. kew. 3. 452. Thunb. monogr. n. 7.
- Leaves obliquely cordate, obtuse, smooth, stem decumbent, scaly.
22. *Ficus heterophylla*. Rough-leaved Fig-tree. Lin. syst. 922. suppl. 442. Thunb. monogr. n. 25. Rheed. mal. 3. 83. t. 62.
- Leaves oblong, undivided, three-lobed and sinuate, scabrous, stem hispid, fruit ovate, peduncled, scabrous.
23. *Ficus microcarpa*. Lin. syst. 922. suppl. 442.
- Leaves oblong, on short petioles, three-nerved, veined, very smooth, fruit globular, small, sessile.
24. *Ficus coriacea*. Leather-leaved dwarf Fig-tree. Ait. hort. kew. 3. 453.
- Leaves oblong, smooth and even, attenuated at the base, cordate, leathery, veins immersed.
25. *Ficus scabra*. Forst. fl. austr. n. 403.
- Leaves cordate-ovate, oblique, entire, scabrous underneath, fruits turbinate, without calyxes.
26. *Ficus aspera*. Forst. pl. escul. 7. fl. austr. n. 404. Thunb. monogr. n. 4.
- Leaves obliquely cordate, sinuate-toothed, rough on both sides, fruits turbinate, the edge of the calyx obscure, and growing to them.
27. *Ficus tinctoria*. Forst. fl. austr. n. 405.
- Leaves obliquely ovate, obtuse, fruits turbinate, calyced at the base.
28. *Ficus septica*. Forst. fl. austr. n. 407.
- Leaves oblique, oblong-ovate, acuminate, peduncles in pairs, calyced at the tip, fruits warted.
29. *Ficus Granatum*. Forst. fl. austr. n. 408. escul. 37.
- Leaves ovate, quite entire, peduncles terminating in pairs, horizontally diverging, fruits calyced, globular.
30. *Ficus obliqua*. Forst. fl. austr. n. 409.
- Leaves lanceolate, very smooth, cartilaginous at the edge, peduncles in pairs, very short, calyxes caducous, the length of the fruit.

31. *Ficus prolixa*.
Forst. fl. austr. n. 410.
Leaves lanceolate-oblong, acuminate, dotted underneath, peduncles in pairs, calyced at the tip.]
32. *Ficus calyculata*.
Mill. dict. n. 11. Houtt. Mfs.
Leaves ovate, quite entire, obtuse, opposite, fruit globular, calyced.
- [33. *Ficus americana*.
Swartz prodr. 127. Aubl. guian. 2. 952. Plum. spec. 124. t. 132. f. 2. Sloan. jam. 2. 140. n. 5. Raii dendr. 16.
Leaves ovate, oblong, veined, quite entire, fruits axillary, peduncled, clustered.
34. *Ficus erecta*.
Thunb. monogr. 11. in Linn. transf. 2: 327. Kämpf. ic. select. t. 4.
F. pumila. Linn. syst. 922. β. Thunb. jap. 33.
Leaves oblong, acute, smooth, netted beneath, stem decumbent, with upright branches, fruits peduncled.
35. *Ficus stipulata*.
Thunb. monogr. n. 7. Linn. transf. 2: 327.
Leaves obliquely cordate, obtuse, smooth, stem decumbent, scaly.
36. *Ficus auriculata*.
Lour. cochinch. 666. Rumph. amb. 3. t. 93.
Leaves heart-shaped, acuminate, fruit eared, racemed, terminating.
37. *Ficus politoria*.
Lour. cochinch. 667. Rumph. amb. 3. t. 63. Burm. ind. 226.
Leaves oblong-ovate, quite entire, rugged, fruit roundish, in spikes, stem erect.
38. *Ficus simplicissima*.
Lour. cochinch. 667.
Leaves palmate, stem quite simple, fruit compressed.
39. *Ficus cannabina*.
Lour. cochinch. 668.
Stem-leaves hastate, gashed, branch-leaves ovate-lanceolate, subserrate, stem suberect.
40. *Ficus populifolia*.
Vahl symb. 1. 82. t. 22.
F. religiosa. Forsk. descr. 180.
Leaves finely cordate, acute, fruits in pairs, pedicelled.
41. *Ficus mollis*.
Vahl symb. 1. 82.
Leaves oblong, quite entire, villose underneath, fruits axillary, sessile, tomentose.
42. *Ficus falcifolia*.
Vahl symb. 1. 82. t. 23.
F. indica. Forsk. descr. 179.
Leaves lanceolate, acuminate, fruits in pairs, axillary, peduncled.
43. *Ficus sagittata*.
Vahl symb. 1. 83.
Leaves heart-shaped, oblong, acute, rugged on both sides, stem creeping.
44. *Ficus denticulata*.
Vahl symb. 1. 83.
Leaves oblong, undivided, three-lobed and sinuate, tooth-letted, rugged, fruit peduncled, muricated, globular.
45. *Ficus truncata*.
Vahl symb. 1. 83.
Leaves oblong, undivided and lobed, quite entire, rugged, fruits peduncled, oblong, truncated, rugged.
46. *Ficus serrata*.
Vahl symb. 1. 83. Forsk. descr. 179.
Leaves oblong, undivided and palmate, repand-toothed, rugged, fruit peduncled, globular, very rugged.
47. *Ficus palmata*.
Vahl symb. 1. 84. t. 24. Forsk. descr. 179.
Leaves cordate-ovate and lobed, serrate, fruits pear-shaped, peduncled, smooth.
48. *Ficus cordata*.
Thunb. monogr. n. 6.
Leaves subcordate, ovate, acute, smooth, coriaceous, stem shrubby, erect.
49. *Ficus falcata*.
Thunb. monogr. n. 8.
Leaves oblong, sickle-shaped, smooth, stem filiform, rooting.

50. *Ficus punctata*.
Thunb. monogr. n. 9.
Leaves oblong, emarginate, smooth, dotted underneath, stem flexuose, rooting.
51. *Ficus nitida*.
Thunb. monogr. n. 14.
Leaves elliptic, acute, smooth, fruits retuse-umbilicate, sessile.
52. *Ficus reflexa*.
Thunb. monogr. n. 16.
Leaves elliptic, obtuse, smooth, branches recurved, fruits globular, sessile.
53. *Ficus drupacea*.
Thunb. monogr. n. 19.
Leaves obovate, cusped, smooth, fruits ovate, wrinkled, sessile.
54. *Ficus reticulata*.
Thunb. monogr. n. 21.
Leaves elliptic, somewhat angular, cusped, smooth, netted underneath, fruits globular, solitary, peduncled.
55. *Ficus sinuata*.
Thunb. monogr. n. 22.
Leaves elliptic, sinuate-toothed, cusped, smooth, fruits globular, aggregate, peduncled.
56. *Ficus capensis*.
Thunb. monogr. n. 23.
Leaves ovate, acute, smooth, serrate, fruits peduncled, smooth.

DESCRIPTIONS, &c.

Linneus tells us, that he removed this genus from the class Cryptogamia to Polygamia, on account of the different structure of the fructification, the spreading umbilicus, navel, or opening of the receptacle in some species, its want of genuine affinity to the plants of the class Cryptogamia, and by the advice of Baron Munchausen, a very acute Botanist. —Some modern authors have again removed the genus into the class Triandria.

There are two treatises expressly on this genus, one in the first volume of the Amoenitates Academicæ, in 1744; and the second by Thunberg in 1786.

Figs are either trees or shrubs, abounding in a milky juice; the branches alternate; the leaves also alternate, when young inclosed within sheathing stipules convoluted into a terminating horn, frequently soon caducous, and the vestiges of them remaining: fruit turbinate or globular, often axillary, either solitary or crowded, either sessile or peduncled, sometimes but seldom in terminating bunches.

Fruit, according to the description of Gærtner, turbinate, umbilicate at the top, fleshy, soft, hollow within. The pericarp is a very small berried drupe, or rather utricle, on a filiform peduncle, covered with the calyx above the middle, and terminated by the permanent style: rind fleshy-gelatinous, subpellucid, finally drying up; shell crustaceous, slender, brittle, resembling a seed, which is of the same shape, namely ovate, narrowing upwards, compressed like a lens, with an umbilical hole below the tip; the embryo somewhat cylindric, hooked, inverted, the lobes semicylindric, lying down, bowed.

The common Fig-tree is, in all probability, originally a native of Asia, though it has been introduced into Europe in the very early ages; the Sycomorus is the growth of Egypt: some of the other species are found in South America and the East Indies, two at the Cape of Good Hope, three in Japan, and some in the South Sea islands; but the greater part are natives of the East Indies; the fruit of most of them is small and useless for eating.

1. The common Fig-tree seldom exceeds two yards in height. The trunk is about the thickness of the human arm; the wood porous and spongy, the bark ash-coloured, full of chinks, and rugged. Branches smooth, with oblong white dots, erect or ascending, flexuose, and bent back. Stipules in pairs, sessile, ovate, acute, ferruginous, caducous.

Leaves annual (in Europe, but within the tropics perennial) cordate, ovate, three or five-lobed, with rounded sinuses, serrate-toothed, paler underneath, rugged on both sides, spreading; the size of the hand, or a span in length. Petioles round, grooved, about an inch in length. Fruits axillary, solitary, the size of a pear, on very short round peduncles. Cordus first remarks the flowers produced within the fruit^d.

The Fig-tree has the same name in all the European languages, but little varied. In German, *Ei-genbaum* or *Figenboom*. In Danish, *Figent*. In Swedish, *Fikonträ*. In French, *Le Ficus*. In Italian, *Fico* or *Figo*. In Spanish, *Higuera*. In Portuguese, *Figueira*. In Russian, *Fin*. In Polish, *Figa*. In Turkish it is *Ingir*. In Arabic, *Tin*.

Native of Asia, Barbary, the southern parts of Europe, Louisiana, &c.

The first figs introduced into England are still remaining in the Archbishop's garden at Lambeth. They are of the white Marseilles kind, and still bear delicious fruit. They cover a surface fifty feet in height, and forty in breadth. The circumference of the trunk of the southernmost is twenty-eight inches, of the other twenty-one. On the South side of the building is another tree of the same age; its circumference at bottom twenty-eight inches. Tradition says, they were planted by Cardinal Pole, and it is very probable; for it is generally allowed that Fig-trees were brought into England in the reign of Henry the Eighth, and it seems likely that the Cardinal, who had long resided in Italy, should be fond of cultivating those fruits to which he had been there accustomed^f. To the objection arising from their great age, it may be answered, that we do not well know how long a Fig-tree will flourish, if properly cultivated. There is also a concurrent tradition of an older tree, and instances of two very ancient ones, the times of whose plantation is well ascertained.—1. At Mitcham, in the garden of the Manor-house, formerly the private estate of Archbishop Cranmer, and now belonging to one of his descendants. It is likewise of the white sort, and is confidently asserted to have been planted by Archbishop Cranmer. Its branches are very low, but its stem, which measures thirty inches in girth, has every mark of great age^g.—2. In the Dean's garden at Winchester, there was in the year 1757 a very ancient Fig-tree, whose fruit was of the small red sort. It was inclosed in a wooden frame, with a glass door and two windows on each side of it for the admission of sun and air. The frame protected it from wind and rain. On the stone wall to which the tree was nailed there was a plaistering, and several inscriptions, one of which mentioned, that in the year 1623 King James I. "tasted of the fruit of this tree with great pleasure." It has been suffered to perish for want of necessary repairs to the frame-work.—3. At Oxford, in the garden of the Regius Professor of Hebrew, is a Fig-tree brought from the East, and planted by Dr. Pocock in the year 1648. It is in a thriving condition, and bears a black fig^h.

I was informed (nov. 18. 1792.) by the learned Dr. John Sibthorp, late Regius Professor of Botany at Oxford, that it bears the marks of great age; that the trunk is perforated by insects, and damaged by time and weather; but that the branches of the new wood were clean, made vigorous shoots, and produced a number of small figs, which were touched by the frost, and were then falling off. The fruit is not, as Grose asserts, *black*; but *white*.

We learn also from Turner's herbal, that the Fig was cultivated here in 1562ⁱ. Gerarde says, in 1597, "that the fruit never cometh to kindly ma-

turity with^s, except the tree be planted under "an hot wall, whereto neither north nor north-east winds can come." Parkinson also in 1629 says, "that you plant it not against a brick wall, or the wall of an house, it will not ripen so kindly: "at the dwarf fig is more tender, and is therefore planted in great square tubs, to be removed into the sun in the summer time, and into the house in winter." In his time only three sorts were known. "1. Figs of Algarva, sweet and delicate, "blewish when ripe. 2. The white ordinary sort "that cometh from Spain. 3. The dwarf fig, not "higher than a man's shoulders, bearing excellent "blew fruit, but not so large as the first^k."]

Mr. Miller informs us, that there are many varieties in the warm countries, which have been obtained from seeds, and might be increased, if the inhabitants were careful in propagating the trees from the seeds of the best sorts. In England we had not more than four or five sorts till within a few years past: for as the generality of the English were not lovers of this fruit, there were few who troubled themselves with the culture of it. But some years past I had a large collection of these trees sent me from Venice, by my honoured friend the Chevalier Rathgeb, which I planted and preserved to taste of their fruits, several of which proved excellent; these I have preserved and propagated, and those whose fruit were inferior have been neglected. And as the variety of them is very great, so I shall here mention only such of them as are the best worth cultivating, placing them in the order of their ripening.

1. The brown or Chestnut-coloured Ischia Fig. This is the largest fruit of any I have yet seen, it is short, globular, with a pretty large eye, pinched in near the foot-stalk, of a brown or Chestnut colour on the outside, and purple within; the grains are large, and the pulp sweet and high-flavoured; this sort very often bursts open when it ripens: which it does the end of July, or the beginning of August. I have had this fruit ripen well on standards, in a warm soil. If it is planted against hot walls, two plentiful crops of fruit may be annually ripened.

2. The black Genoa Fig. This is a long fruit, which swells pretty large at the top, where it is obtuse, but the lower part is very slender toward the stalk; the skin is of a dark purple colour, almost black, and has a purple farina over it like that on some Plumbs; the inside is of a bright red, and the flesh is very high flavoured. It ripens early in August.

3. The small white early Fig. This has a roundish fruit a little flattened at the crown, with a very short foot-stalk; the skin, when fully ripe, is of a pale yellowish white colour; the skin is thin, the inside white, and the flesh sweet, but not high-flavoured. This ripens in August.

4. The large white Genoa Fig. This is a large globular fruit, a little lengthened toward the stalk; the skin is thin, of a yellowish colour when fully ripe, and red within. This is a good fruit, but the trees are not good bearers.

5. The black Ischia Fig. This is a short fruit, of a middling size, a little flattened at the crown; the skin is almost black when ripe, and the inside is of a deep red; the flesh is very high flavoured, and the trees produce a good crop of fruit, but the birds are great devourers of them, if they are not protected. This ripens in August.

6. The Malta Fig. This is a small brown fruit, much compressed at the top, and greatly pinched toward the foot-stalk; the skin is of a pale brown colour, as is also the inside; the flesh is very sweet, and well flavoured. If this sort is permitted to hang upon the trees till the fruit is shrivelled, it becomes a fine sweetmeat.

7. The Murrey, or brown Naples Fig. This is a pretty large globular fruit, of a light brown colour on the outside, with some faint marks of a dirty white, the inside is nearly of the same colour; the

^k Parad. 567.

^c Thunb. diss. de Ficu.

^d Linn. amoen.

^f Cardinal Pole returned from Italy to England in 1525.

^g It has been demolished several years. 1792.

^h Grose's antiqu. vol. 3. and Ducarrel's hist. of Lambeth palace, p. 77, 78. by whom the above particulars were communicated in 1773.

ⁱ Hort. kew.

grains are pretty large, and the flesh is well flavoured. It ripens the latter end of august.

8. The green Ischia Fig. This is an oblong fruit, almost globular at the crown; the skin is thin, of a green colour; but when it is fully ripe, it is stained through by the pulp to a brownish cast; the inside is purple, and will stain linen, or paper; the flesh is high flavoured, especially in warm seasons. It ripens toward the end of august.

9. The Madonna Fig, commonly called here the Brunswick, or Hanover Fig, is a long pyramidal fruit of a large size; the skin is brown; the flesh is of a lighter brown colour, coarse, and has little flavour. This ripens the end of august, and the beginning of september; the leaves of this sort are much more divided than of most others.

10. The common blue, or purple Fig, oblong; the tree a great bearer; the fruit ripens in august.

11. The long brown Naples Fig. The leaves of this tree are deeply divided. The fruit is long, somewhat compressed at the crown. The foot-stalks are pretty long; the skin is of a dark brown when fully ripe, the flesh inclining to red; the grains are large, and the flesh well flavoured. It ripens in september.

12. The yellow Ischia Fig. This is a large fruit, of a pyramidal form; the skin is yellow when ripe, and the flesh is purple and well flavoured, but the trees do not produce much fruit here; they grow very luxuriant in branches, the leaves are very large, and not much divided. This ripens in september.

13. The small Brown Ischia Fig. This is a small pyramidal fruit, with a very short foot-stalk; the skin is of a light brown, the flesh inclining to purple, of a very high flavour; it ripens late in september; the leaves of this tree are less divided than any of the other sorts. This is not a good bearer.

14. The Gentile Fig. This is a middle sized globular fruit; the skin, when ripe, is yellow; the flesh also inclines to the same colour; the grains are large, and the flesh is well flavoured, but it ripens very late, and the trees are bad bearers, so that it is not propagated much in England.

There are several others which have been lately introduced from Italy, but all those which I have yet tasted, are inferior to those above-mentioned; some of them rarely ripen their fruit, and others are very ill bearers, not worth propagating, therefore I have omitted the mentioning of them here; for as those which are enumerated, continue in succession during the season for these fruits, and are preferable to the others, few persons will care to fill their gardens with a greater variety of these trees than are of real use, especially as they require good walls, and a very large share of room.

2. The Egyptian or Pharaoh's Fig-tree or Sycomore is a large tree, with leaves like those of the Mulberry.

[The stem is often fifty feet thick; and as it spreads out its boughs very much, it is of great use in a scorching climate to shade those who travel through the deserts. The Mummies in Egypt are preserved in coffins of this wood, which is of a reddish colour, light, and very proper for this use, because it does not rot for many ages. The fruit] is produced from the trunk and larger branches, and is shaped like the common Fig; it [is pierced by an insect (Cynips sycomori) a little before it ripens, in two different ways; either the scales which cover the calyx wither, and are bent back, as in the common fig, for the admission of the insect; or, which is more common in this species, a little below the scales on the side of the involucre the fruit is affected with a gangrene, which extends itself, and frequently occupies the space of a finger's breadth; it withers, the place affected becomes black, the fleshy substance in the middle is corroded, for the breadth of a quill, and the male blossoms, which are nearest, appear naked, opening a way for the insect, which makes several furrows in the inside of the fruit, but never touches the stigmas, though it frequently eats

the germs. The gangrenous part is at first covered by the blossoms, but the hole is by degrees enlarged, of various sizes, in different fruits; the margin and sides being always gangrenous, black, hard, and turned inwards. The fruit tastes pretty well; when quite ripe it is soft, watery, somewhat sweet, with a very little portion of an aromatic flavour: though fleshy enough, yet but little of it is good, the insects having eaten much of it. At the end of march it buds, and the fruit ripens the beginning of june: the inhabitants wound or cut it when it buds, and say that without this precaution it will not bear fruit¹. We call it in English Sycomore tree, and Mulberry Fig-tree. This, and not the Great Maple, is the right Sycomore^m.

Native of Egypt, the Levant and Cochinchina. Cultivated by Mr. Miller in 1736^a.]

3. This rises with a strong, upright, woody stem twenty feet high, sending out several side branches, which have large, oval, thick, stiff leaves [as big as those of yellow Water-Lily, waved a little about the edge, blunt with a point, hanging down, as it were peltate, smooth, whitish underneath^b,] about fourteen inches long; and near a foot broad, having several transverse veins: the foot-stalks are a span long, and more, compressed, smooth, and frequently turned next to the branches. Native of the East-Indies; whence it was brought to the gardens in Holland [and cultivated in 1759, by Mr. Miller^b.

4. This is a large tree, with a short trunk, and very long spreading boughs. Leaves smooth,] of a light green, six or seven inches long, and three inches and a half broad towards the base, diminishing gradually to the top, where they run out into a narrow point, an inch and half long. The fruit comes out on the branches, is small, and of no value: [According to Gærtner, it is the size of a small hazel nut, slightly turbinate, (yellow, dotted;) when dry becoming thin, the substance of paper, of a dun colour, defended at the base with a one-leaved floral bracte repandly lobed; and having at the top three minute converging scalelets, closing the aperture there. The internal cavity is filled with florets. The female florets are trifid, and of a blackish brown colour. The seeds are small, globular, whitish, smooth, crustaceous, fixed by a long, capillary, umbilical chord.—According to Linneus it is the shape and size of peas, axillary, solitary, or aggregate. Calyx inferior, three-leaved^c.

Native of the East-Indies and Cochinchina.—Cultivated in 1731, by Mr. Miller^c.

5. This is a middle-sized tree: Branches slender, flexuose, streaked and wrinkled. Leaves petioled, exactly ovate, entire, very slenderly streaked across, with the edge distinct and smooth, perennial, and like those of the pear; on very short subtrigonal petioles. Fruits globular, scattered on the branchlets. Native of the East-Indies^d. Cultivated in 1757, by Mr. Miller^d.

66. Stem shrubby, round, upright, all smooth, a fathom in height. Branches like the stem. Leaves somewhat waved, nerved, the size of the hand; on a semicylindric petiole, half an inch in length^e.

Native of the East-Indies, and cultivated 1692, in the Royal Garden at Hampton Court.

7. Native of South America. Introduced 1776, by Hugh Duke of Northumberland.

8. Native of the East-Indies. Introduced 1772, by Mr. William Malcolm^f.

9. This vast tree is entirely smooth, the branches spreading very wide, bowed down, the lower ones rooting, ash-coloured. Leaves acuminate, with a blunt point, obscurely waved, marked with parallel nerves, paler underneath, a span long, on semicylindric, ash-coloured petioles, of a finger's length. Fruits aggregate here and there on the branchlets, peduncled, the size of a hazel nut^g.

¹ Hasselquist.

² Linn. mant.

³ Hort. kew.

⁴ Hort. kew.

^m Gerarde's herbal.

^p Hort. kew.

¹ Linn. mant. & Thunb. mon.

² Thunb. mon.

³ Thunb.

^a Hort. kew.

^b Linn. mant.

^c Hort. kew.

It is called by the English Banyan tree, and *arbor de Rayz*, that is, the rooting tree, by the Portuguese; and it propagates itself, as Mr. Evelyn observes, into a forest, by letting a kind of gummy string fall from its branches, which takes root, and thus spreads a vast circuit. This, however, is the case with the third, fourth, fifth, sixth and tenth species, and perhaps others.—One of these growing near Mangee, twenty miles west of Patna in Bengal, was in diameter 370 feet; the circumference of the shadow at noon was 1116 feet; the circumference of the several stems, which were fifty or sixty in number, 921 feet².

There is a vast tree of this kind near Fort St. David's in the East-Indies, which is computed to cover near 1700 square yards. A very celebrated Banian tree is also growing near Gombroon on the Persian Gulph.

The Gentoos are almost as sensibly hurt, if any one cuts or lops off any of the branches, as if he had mutilated or destroyed a cow, which he holds in so much veneration³.

Hence another species is named by Linneus *religiosa*, being sacred to the idol *Vishnu*, who is said to have been born under it⁴.

From the manner of its growth, Gerarde names it the arched Indian Fig-tree.

Strabo mentions this tree, and says that the branches grow horizontally about twelve cubits, then taking a direction to the earth, where they root themselves, and when they have attained maturity, continue to propagate in the same manner, till the whole becomes like a tent supported by many columns.

Pliny (l. 12. c. 5.) describes this singular tree with his usual elegance.—“*Ficus ibi [in India] exilia poma habet: ipsa se semper ferens, vastis diffunditur ramis, quorum imi adeo in terram curvantur, ut annuo spatio insignantur, novamque sibi propaginem faciant circa parentem in orbem quodam opere topiario. Intra sepem eam æstivant pastores, opacam pariter & munitam vallo arboris, decora specie subter intuenti, proculve, fornicato ambitu. Superiores ejus rami in excelsum emicant, sylvestra multitudinem, vasto matris corpore ut LX. passus plerique orbe colligant, umbra vera bina stadia operiant.*”

Milton seems to have had these classical descriptions in his eye:—

“ Branching so broad and long, that in the ground
“ The bending twigs take root; and daughters grow
“ About the mother tree; a pillared shade,
“ High over-arched, with echoing walks between.
“ There oft the Indian herdsman, shunning heat,
“ Shelters in cool; and tends his pasturing herds:
“ At loop-holes cut through thickest shade.”

Native of the East-Indies and Cochin China. Cultivated in 1759, by Mr. Miller⁵.

10. This rises to the height of thirty or forty feet, sending out many slender branches, which put out roots. Leaves eight or nine inches long, and two inches broad.

[The fruit is not bigger than a hazel-nut, of a scarlet or carnation colour, the taste sweetish, and not unpleasant. It is much coveted by the Wild Pigeons⁶.

Native of the West-Indies. Introduced about 1762, by Mr. James Gordon.

11. 12. Natives of the East-Indies. Introduced in 1763, by Mr. John Bush⁷.

13. Branches round, smooth, ferruginous, upright; branchlets scattered, short. Leaves oblong, nerved, smooth, pale underneath, from an inch to three inches and more in length, on round, grooved petioles, from half an inch to an inch long. Fruits in racemes, globular, almost the size of a plum⁸.

Native of the East-Indies. Cultivated in 1759, by Mr. Miller⁹.

14. A small tree, with striated spreading branches. Leaves acuminate, ovate-oblong, entire, very smooth, with parallel nerves, on round, grooved petioles. Fruit red, the size of red currants, scattered in racemes, very abundant, pedicelled¹⁰.

Native of South America. Introduced about 1780¹¹.

15. Leaves petioled, leathery, smooth and even, quite entire. Fruits on the branches, dispersed; with a three-leaved, approximating calyx. Native of the East-Indies¹².

16. Stem creeping, rooting, round, full of chinks, ash-coloured, smooth. Branches few, like the stem. Leaves entire, coriaceous, paler beneath, petioled. The small branches at the leaves surrounded with an elevated streak. Peduncles axillary, filiform, solitary. Calyx inferior, three-leaved. Fruits ovate, smooth, the size of a plum.—Native of China and Japan¹³.

17. A middle-sized shrub, with round, smooth, ferruginous branches. Leaves acute, sinuate-angular, gash-lobed, villose above, white-tomentose underneath, a span and more in length, on round, striated, subtomentose petioles. Fruits ovate, tomentose, the size of a plum, on thick, tomentose peduncles¹⁴.

This is said to be extremely poisonous. It grows near Padan in Sumatra¹⁵.

18. A middle-sized tree, with upright stem and branches. Leaves large, rough, alternate, petioled. Fruit middle-sized, turbinate, brown, axillary, solitary¹⁶.

Native of America. According to Thunberg the *maculata* and *hispida* of Syst. veget. are one and the same plant.

19. This is a tree leafy at top, with round wrinkled tomentose branches, and very short branchlets. Leaves petioled, scarcely cordate, acute, spreading, entire, more ribbed underneath, smooth. Fruits axillary, alternate, many, globular, the size of currants. Peduncles very short, one-flowered. Calyx obtuse. Navel triangular, each angle-cleft with an oblong slit.—Native of Surinam¹⁷.

20. The whole clothed with very minute thinly scattered hairs. Branches round, striated, ash-coloured, smooth. Leaves cusped, serrate, rugged on both sides, with hairy nerves, about a span in length, on grooved petioles an inch long. Peduncle in the axil of the leaves, filiform, hispid with short, rigid, yellowish, shining bristles. Fruit globular, clothed with the same tegument as the peduncle¹⁸, axillary, racemed, turbinate, the size of a plum, according to Thunberg.—Native of Java.

21. Stem filiform, decumbent, rufescent, smooth; branches filiform, decumbent, bent in, stipuled, rufescent. Stipules scattered, awl-shaped, spreading, rufescent. Leaves entire, bright green above, paler underneath and netted, on petioles scarcely half a line in length¹⁹.

Native of China and Japan. Introduced about 1771²⁰.

22. Stem slender, subflexuose. Leaves petioled, with both surfaces very scabrous; the lower ones undivided, oblong, entire; the upper ones divided as in the common Fig²¹.

It is thus described by Thunberg. Stem shrubby, erect, entirely rugged. Branches round, flexuose, elongated, little subdivided. Leaves cusped, toothed, with a reflex margin, pale underneath, rugged on both sides, nerved, from erect spreading, a finger's length, on semicylindric petioles. Fruits axillary, ovate, obtuse, hispid, the size of a hazel nut, on peduncles shorter than the petioles. In Linneus's supplement they are described as smooth.—Native of the East-Indies, near rivulets and watery places scarcely accessible on account of the Rattans.—Cultivated in 1758, by Mr. Miller²².

¹⁰ Linn. suppl. & Thunb.

¹¹ Hort. kew.

¹² Linn. mant.

¹³ Linn. syst. & Thunb.

¹⁴ Thunberg.

¹⁵ Linn.

¹⁶ Loureiro.

¹⁷ Linn. suppl. & Thunb.

¹⁸ Linn. suppl.

¹⁹ Thunberg.

²⁰ Hort. kew.

²¹ Linn. suppl.

²² Hort. kew.

² Marsden's Sumatra, 130.

³ Ives's voy. to India, 199 & 460.

⁴ Hort. malab. 1. 48.

⁵ Hort. kew.

⁶ Sloan.

⁷ Hort. kew.

⁸ Thunberg.

⁹ Hort. kew.

23. Native of Java^{*}. The same with *F. benjamin*; n. 5. according to Thunberg.

24. Native of the East-Indies. Introduced in 1772, by Mr. William Malcolm[†].

25. Native of the isles of Tanna and Namoka in the South Seas[‡].

26. This is a tree four or five fathoms in height, with jointed branches. Leaves alternate, subpetioled; ovate-cordate, acuminate, the inner disk narrower, hairy, spreading, a span long. Petioles round, with a groove on the upper side. Receptacles (or fruit) axillary, in pairs, sessile, filky-tomentose on the outside, white, the size of the common Fig, fleshy, juicy and sapid. It has no common calyx, but an obscure rim, entire, scarcely two or three-toothed, surrounds the receptacle where it begins to spread out[§].—Thunberg says that the fruit is globular, and the size of a plum.

Native of the isle of Tanna: where it is also cultivated for the fruit, which is sweet and pleasant; the young leaves boiled are eaten as greens.

27. Native of the Society isles^b.

28. Native of the isle of Tanna. In Otaheite it is called *Matte*.

Loureiro has given the same name to a Cochinchinese Fig, on account of its septic qualities. It is used there for eating off proud flesh, and against worms. He describes it, as a shrub eight feet high, and upright, with spreading branches. Leaves broad-lanceolate, quite entire, rough, scattered, petioled. Fruit oblong-turbinate, wrinkled, flaccid, lateral, axillary, on short simple solitary peduncles, green, tinged with red. He refers to *Rumphius*, t. 96. and to *Burm. ind.* 226.

29. This is a tall shady tree, with a multangular torose trunk: all the branches ascending, long, roundish, somewhat jointed, brown-ash-coloured, unequal; branchlets round, jointed, leafy only at the end. Leaves crowded, alternate, smooth, with few yellow veins, dark green above, more shining beneath, a span or more in length, spreading. Petioles roundish, smooth, spreading, one quarter of the length of the leaves. Terminating buds closer, like a spine, covered entirely with bay-coloured hairs. Peduncles from the axils of the upper leaf and the next, thick, very short, round. Receptacle (or fruit) larger than the common Fig, subpubescent, rose-coloured with yellow spots, within purple, soft and pulpy. Common calyx three-leaved, with small ovate-roundish leaflets. Cultivated (with the 26th) in the isle of Tanna for its fruit, which is sweetish, watery, and almost insipid.

30. Native of the isles of Namoka and Tanna.

31. Native of the Society isles^c.]

32. This rises with many shrubby stalks to the height of twelve or fourteen feet, and divides into many smaller branches. The leaves are four inches long, and three broad, of a light green, and stand upon very short foot-stalks, joined to a cup in which the fruit sits; this is globular, and the size of a middling nutmeg, of a deep yellow, when ripe, but is not eatable. Native of La Vera Cruz, whence it was sent to Mr. Miller by Dr. Houstoun.

33. The fruit is of a pale yellow colour, and spherical. Native of Jamaica.

[34. Stem weak, round, striated and chinky, ferruginous ash-coloured, smooth. Branches alternate or subumbelled-aggregate, like the stem. Leaves obovate, a little attenuated to both ends, entire, ash-coloured and netted beneath, spreading, from an inch to a finger's length. Petioles subtrigonal, grooved, half an inch in length. Fruits scattered on the branchlets, erect, subglobular, the size of a hazel nut. It differs from *F. pumila*, of which it was supposed to be only a variety, in having larger leaves, less netted, and thinner; and smaller, sweeter, more eatable fruits. Native of Japan^d.

35. Stem filiform, rufescent, smooth. Branches also filiform, decumbent, bent in, stipuled, rufescent.

Stipules scattered, awl-shaped, spreading, rufescent. Leaves entire, paler underneath and netted, on petioles scarcely half a line in length. Native of Japan^e.

36. This is a large tree, with oblique branches. Leaves subserrate, tomentose, large, scattered, petioled. Fruit turbinate, two inches long, of an even surface, red within and without, in heaped, erect, terminating racemes. Calyxes of the receptacle three-leaved, permanent. Besides the aperture at the top common to the whole genus, there are four distant holes on the shoulder of the fruit, fenced round by prominent cartilages resembling ears.

Native of Cochinchina, where the fruit before it is ripe cut in slices tastes like the cucumber, and is eaten in salads.

Caprificus amboinensis esculenta of Rumphius agrees with the above in many circumstances: but the fruit is smaller, lateral, and has no ears.

37. This is a shrub, six feet high, upright and branched. Leaves subacute, small, petioled, scattered. Fruit very small, saffron-coloured. Native of Cochinchina; where the dried leaves are used in polishing small works in wood or ivory.

38. This is a shrub five feet in height, with an upright straight stem, without any branches. Leaves rough, large, petioled, scattered. Fruit spheroidal, saffron-coloured, small, sessile, axillary, solitary. Native of Cochinchina.

39. This is a shrub six feet in height, with a branching stem, covered with a smooth bark like hemp. All the leaves are very rough, petioled and scattered. Fruit oval-turbinate, on long, simple, solitary, lateral peduncles. Calyx trifid, with rounded segments.

Native of Cochinchina.

F. heterophylla of Koenig (n. 22.) does not agree with this in the leaves, nor in its flexuose, hispid stalk. *Caprificus chartaria* of Rumphius approaches to this, especially in its tough bark, which may be made use of for cloth, that serves many of the inhabitants of the islands in the South Seas for clothing^f. See n. 84.

40. Branches round, smooth, with a wrinkled bark. Leaves quite entire, very smooth on both sides, veined, two inches long, and of the same breadth at the base. Petiole the length of the leaf, and smooth. Peduncles in pairs, axillary, smooth, thicker at both ends, half an inch long: under the fruit two or three short roundish scales. Fruit globular, smooth, the size of peas.

It is distinct from *F. religiosa* in having acute leaves, not ending in a long point, and peduncled fruits:—from *nymphæifolia* in the leaves being exquisitely cordate, of the same colour on both sides, by no means obtuse and mucronate:—from *Sycomor* and *cordifolia* of Thunberg in having the fruit peduncled.

Its proper place is between the third and fourth species.

41. Branches round, villose, tomentose towards the top. Leaves obtuse, a little narrower at the base, with a narrow sinus at the petiole, the upper surface even, the lower veined and softish; they are two inches long, and have a villose petiole shorter than the leaf. Fruit solitary, small.

Native of the East-Indies. Its proper place is between the fifth and sixth species.

42. The whole of this is very smooth and even. Leaves pale-coloured, acuminate, rounded at the base, from three to five inches in length. Petioles an inch and half long. Stipules lanceolate, deciduous. Fruit globular, even, the size of peas. *F. indica* differs in having oblong leaves with an obtuse point, fruits on the branchlets aggregate, and the size of a hazel nut, and the branches rooting. The place of this is between the sixth and seventh species.

43. Stem smooth, pubescent at top, and creeping by means of fibres opposite to the leaves; which

^{*} Linn. suppl.

[†] Hort. kew.

[‡] Forster.

^a Ibid.

^b Ibid.

^c Ibid.

^d Thunberg.

^e Ibid.

^f Loureiro.

are quite entire, rugged on both sides, with scattered dots underneath, sharp, an inch and half long, having straight earlets. Petioles scarcely two lines in length. Stipules lanceolate at both ends. Native of the East-Indies. The proper place is between the eleventh and twelfth species.

44. Branches angular at top, and hairy. Leaves two or three-lobed at top, very rugged on both sides, veined, acute, remotely and unequally toothed, quite entire towards the base, and frequently on one side almost to the middle, two inches long and more, on a very short, villose petiole. Fruit smooth, a little larger than a pea, terminated by a truncated wart, and roughened by unequal scattered tubercles. Native of the East-Indies.

This was sent by Koenig under the name of *F. heterophylla*, but it is probably different from n. 22., since it does not agree in the size and form of the fruit; nor is it hispid, as Thunberg says the *heterophylla* is (p. 13.) See n. 39.

45. Branches angular, smooth and even. Leaves sharp, netted-veined, shining above, paler underneath, two inches and more in length: lobes oblong, lateral, obtuse. Petiole short, wrinkled, channelled above. It differs from *F. denticulata* in having hairy branches, shorter petioles, leaves more tender, and not at all shining, toothletted, and globular fruit, with larger and fewer dots. Native of the East-Indies.

46. Branches at top, and also the younger leaves, very rugged, with extremely small and numerous dots. Leaves petioled, nerved, sharp at the base, quite entire, opaque. Fruit almost the size of a hazel nut, villose, on a very short peduncle.

This differs from the other species in having divided leaves, the branches and leaves dotted and rugged, the leaves palmate, repand at the base, narrowed, not rounded, and the fruit covered with very numerous minute dots.

47. Branches round, smooth. Leaves sharply ferrate, almost to the base, rugged on both sides, veined, paler underneath, with purplish veins, two inches long: lobes ovate, acute. Petiole only half the length of the leaf. Fruit solitary, a little larger than a pea. Peduncle the length of the fruit, with a pair of small bractes on the middle of it. The proper place of the four last is between the sixteenth and seventeenth species.—Perhaps not different from *heterophylla* ⁶.

48. This is a middle-sized shrub, entirely smooth. Branches round, somewhat wrinkled, ash-coloured, from erect spreading, branchletted. Leaves towards the ends of the branches and branchlets approximating, entire, netted-veined, spreading, an inch and half long, on round short petioles. Fruits sessile, towards the ends of the branches and branchlets in the axils of the leaves approximating, globular, the size of peas. Native of the Cape of Good Hope.

49. Stems filiform, decumbent, rooting, flexuose, brown. Branches filiform, simple, like the stem. Leaves obliquely inserted, with one side narrower, blunt, very finely nerved, entire, pale underneath, on very short petioles. Native of the East-Indies.

50. Stem parasitical, climbing, round, wrinkled, brown, scarcely the thickness of a goose quill. Branches flexuose, smooth, brown. Branchlets very short. Leaves blunt, obscurely emarginate, entire, with the edge a little bent back, smooth above, hollow-dotted underneath, spreading and reflex, from half an inch to an inch in length. Petioles very short. Fruits obovate, nearly the size of the common Fig. Native of the East-Indies.

51. Stem entirely smooth. Branches striated and wrinkled, from erect spreading. Leaves entire, marked with parallel nerves, spreading, from an inch to a hand in length, on semicylindric very short petioles. Fruits at the ends of the branchlets, sessile, globular, retuse, the size of peas.

52. Branches striated and wrinkled, reflex, ashi-

coloured, smooth. Leaves entire, marked with parallel nerves, a finger's length, on ash-coloured petioles shorter by half than the leaf. Fruits scattered, and aggregate on the branches, smooth, the size of peas. Native of the East-Indies.

53. Branches round, grooved, smooth. Leaves scattered, acuminate, coriaceous, entire, nerved, ash-coloured underneath, the size of the hand, on semicylindric, thick, short petioles. Fruits towards the ends of the branches, smooth, the size of plums. Native of the East-Indies.

54. Branches round, wrinkled, purple, smooth, upright. Leaves obovate, attenuated below, toothed and bent back at the edge, pale beneath, spreading, the size of the hand, on semicylindric, thick, very short petioles. Fruits axillary, smooth, larger than peas, on peduncles a line in length. Native of the East-Indies.

55. Branches round, striated, ash-coloured, smooth, erect. Leaves tooth-angular at top, with a reflex margin, entire at bottom, pale underneath, nerved, netted, spreading, the size of the hand, on semicylindric, grooved, short petioles. Fruits on the branchlets scattered and aggregate, sessile, globular, somewhat knobbed, smooth, scarcely the size of pepper. Native of the East-Indies.

56. This is a vast lofty smooth tree, with spreading branches. Leaves sinuate-toothed, paler underneath, nerved, spreading, a finger's length. Fruits scattered, turbinate, the size of a hazel nut, or bigger. Native of the Cape of Good Hope ^a.]

PROPAGATION AND CULTURE.

1. The first, second, third, ninth and tenth varieties will ripen their fruits on standards, where they are in a warm situation; but the others require the assistance of walls exposed to good aspects, otherwise their fruit will not ripen in England.

Fig-trees generally thrive in all soils, and in every situation; but they produce a greater quantity of fruit upon a strong loamy soil, than on dry ground; for if the season proves dry in may and june, those trees which grow upon very warm dry ground, are very subject to cast their fruit; therefore whenever this happens, such trees should be well watered and mulched, which will prevent the fruit from dropping off; and the fruit upon these trees are better flavoured than any of those which grow upon cold moist land. I have always observed those Fig-trees to bear the greatest quantity of well-flavoured fruit, which were growing upon chalky land, where there has been a foot or more of a gentle loamy soil on the top. They also love a free open air; for although they will shoot and thrive very well in close places, yet they seldom produce any fruit in such situations; and all those which are planted in small gardens in London, will be well furnished with leaves, but I have never seen any fruit upon them which have grown to maturity.

These trees are always planted as standards in all warm countries, but in England they are generally planted against walls, there being but few standard Fig-trees at present in the English gardens; however, since some of the sorts are found to ripen their fruit well upon the standards, and the crop of Figs is often greater upon them than upon those trees against walls, it is worthy of our care to plant them either in standards or espaliers; the latter, I think, will succeed best in England, if they were managed as in Germany, where they untie the Fig-trees from the espalier, and lay them down, covering them in winter with straw or litter, which prevents their shoots being injured by the frost; and this covering is taken away gradually in the spring, and not wholly removed until all the danger of frost is over, by which management they generally have a very great crop of Figs; whereas in England, where the trees grow against warm walls, if the spring proves warm, the young Figs are pushed out early, and the cold, which frequently returns in april and may, causes the greatest part of the fruit to drop off; so

⁶ Vahl.

^a Thunb. monogr.

that our crop of Figs is generally more uncertain than most other sorts of fruit: and it frequently happens, that trees which are planted against north and east-aspected walls, produce a greater quantity of fruit in England than those which are planted against south and south-east aspects; which must happen from the latter putting out their fruit so much earlier in the spring than the former; and if there happen cold frosty nights after the Figs are come out, which is frequently the case in this country, the forwardest of the Figs are generally so injured as to drop off from the trees soon after. In Italy, and the other warm countries, this first crop of Figs is little regarded, being few in number; for it is the second crop of Figs produced from the shoots of the same year, which is their principal crop, but these rarely ripen in England; nor are there above three or four sorts which ever ripen their second crop, let the summer prove ever so good, therefore it is the first crop which we must attend to in England; so that when these trees are growing against the best aspected walls, it will be a good method to loosen them from the wall in autumn; and after having divested the branches of all the latter fruit, to lay the branches down from the wall, fastening them together in small bundles, so that they may be tied to stakes, to keep them from lying upon the ground; the damp whereof, when covered in frosty weather, might cause them to grow mouldy, and hereby they will be secured from being broken by the wind. When they are thus managed in autumn, if the winter should prove very severe, the branches may be easily covered with peas-haulm, straw, or any other light covering, which will guard the tender fruit-bearing branches from the injury of frost; and when the weather is mild, the covering must be removed, otherwise the Figs will come out too early; for the intention of this management is to keep them as backward as possible: then in the spring, when the Figs are beginning to push out, the trees may be fastened up to the wall again. By this management I have seen very great crops of Figs produced in two or three places.

I have also seen great crops of Figs in some particular gardens, after very sharp winters, when they have, in general, failed in other places, by covering up the trees with Reeds made into pannels, and fixed up against the walls.

In pruning Fig-trees, the branches must never be shortened, because the fruit is all produced at the upper part of the shoots of the former year; if these are cut off, there can be no fruit expected; besides, the branches are very apt to die after the knife; so that when the branches are too close together, the best way is to cut out all the naked branches quite to the bottom, leaving those which are best furnished with lateral branches at a proper distance from each other, which should not be nearer than a foot; and when they are well furnished with lateral branches, if they are laid four or five inches farther asunder, it will be better.

The best season for pruning Fig-trees is in autumn, because at that time the branches are not so full of sap, and will not bleed so much as when they are pruned in the spring; and at this season, the branches should be divested of all the autumnal Figs, and the sooner this is done, when the leaves begin to fall off, the better will the young shoots resist the cold of the winter. There are some seasons so cold and moist, that the young shoots of the Fig-trees will not harden, but are soft, and full of juice; when this happens, there is little hope of a crop of Figs the succeeding year, for the first frost in autumn will kill the upper part of these shoots for a considerable length downward; whenever this happens, it is the best way to cut off all the decayed part of the shoots, which will prevent the infection from destroying all the lower part of the branches; and, by this method, I have seen a moderate crop of Figs put out from the lower part of the shoots; where, if the shoots had not been injured, there would have been no fruit produced, because it is chiefly from the four or five uppermost joints of the

shoots that the fruit comes out; and it is for this reason, that as many of the short lateral branches should be preserved as possible, those being the most productive of fruit; for where the long straight shoots are fastened up, there will be no fruit, but at their extremities, so that all the lower part of the trees will be naked, if there is not a particular regard had to supply young shoots in every part of the trees.

Those trees which are laid down from the espaliers, should not be fastened up again till the end of march for the reasons before given, and those against walls may remain some time longer; and when the large shoots of these are nailed up, if the small lateral branches are thrust behind these, to keep them close to the wall, it will secure the young Figs from being injured by the morning frosts; and when this danger is over, they may be brought forward to their natural position again: during the summer season these trees will require no other pruning, but to stop the shoots in the spring, where lateral branches are wanting; and as the branches are often blown down by wind, therefore whenever this happens, they should be immediately fastened up again, otherwise they will be in danger of breaking; for the leaves of these trees being very large and stiff, the wind has great power on them; so that where the branches are not well secured, they are frequently torn down.

Those trees which are planted against espaliers may be protected from the injury of frost in the spring, by placing Reeds on each side the espalier, which may be taken down every day, and put up again at night; but this need not be practised in warm weather, but only at such times as there are cold winds and frosty mornings; and although there is some trouble and expence attending this management, yet the plentiful crop of Figs which may this way be obtained, will sufficiently recompense for both: the best way of making this covering is, to fasten the Reeds with rope-yarn in such a manner as that they may be rolled up like a mat, that the whole may with great facility be put up or taken down; and if these Reeds are carefully rolled up, after the season for using them is over, and put up in a dry shed, they will last several years.

There are several persons who of late have planted Fig-trees in standards, which have succeeded very well; this practice was revived, by observing some old standard Fig-trees in some gardens, which had been growing many years, and generally produced a much greater plenty of fruit than any of those trees which were growing against warm walls; indeed, these standard Fig-trees are in much greater danger of having their branches killed by severe frost, but in mild winters they generally do better than those against walls; so that where these trees can be covered in very hard winters, there will always be plenty of fruit; and these may be covered by fastening as many of the branches together as can be conveniently brought into a bundle, and winding some hay-bands, straw, peas-haulm, or any such light covering as can be readily procured, which in the spring may be gradually taken off, so as not to expose the shoots all at once to the open air; and if there is some such light covering laid round the stems, and upon the surface of the ground about their roots, it will more effectually secure them from the danger of frost; but when this is practised, great care should be taken that no mice or rats harbour in this covering, for these will eat off the bark from their shoots, and kill them: and I have often-observed those trees which were against walls, have suffered greatly by these vermin, by having many of their largest branches disbarked near the ground, which has absolutely killed them; and it is in the winter that these vermin do this mischief to them, therefore they should be carefully watched at that season.

The common blue and white Figs, which are the sorts which have been the most generally cultivated in England, are not so proper to plant for standards as some other sorts which have been lately intro-

duced; for they are much tenderer, and are often killed almost to the root, when some of the other sorts, which have been growing in the same situation, have received very little injury from the frost; indeed the white sort is generally a great bearer, and the fruit is very sweet; but to those palates which are accustomed to Figs, that sort is not much in esteem, from its want of flavour: those which have succeeded best with me, are the first and third sorts. Their branches are rarely hurt by frost in winter, and their fruit will always ripen well; for in favourable seasons, many of these sorts, which were growing against walls, have ripened their second crop of fruit tolerably well. I have also planted many of these sorts of Fig-trees against north-east and north-west aspects; some of those which were first planted, have produced a good quantity of well tasted fruit, but were ripe much later, which has encouraged me to plant many more of these trees to the same aspects, and also to increase my number of standard trees.

I am aware, that what I have here advanced, in relation to the pruning and dressing of Fig-trees, will be condemned by great numbers of people, who will not give themselves time to consider and examine the reasons upon which I have founded this practice, nor to make one single experiment to try the truth of it, as being vastly different from the general practice of most gardeners, who always imagine, that Fig-trees should never have much pruning; or, at least, that they should always be suffered to grow very rude from the wall, to some distance. That by this management I have often seen great quantities of fruit I cannot deny, but then this has been only after mild winters; for it is very certain, that in sharp frosts few of these outside shoots escape being greatly injured where they are not covered; whereas it rarely happens that those shoots which are closely nailed to the wall in autumn, or laid down and covered, suffer the least damage; and the fruits are always produced a fortnight sooner upon these branches, than they are upon those which grow from the wall: but although the trees which are suffered to grow rude from the walls may produce a good quantity of fruit for a year or two, yet afterwards the trees will only bear at the ends of the shoots, which will then be so far from the wall, as to receive little benefit from it; nor can the trees be reduced again to any regularity, without cutting away the greatest number of their branches, by which a year or two will be lost before they will come to bear again.

The season also for pruning, which I have laid down, being vastly different from the common practice and opinion of most gardeners, will also be objected against; but I am sure, if any one will but make trial of it, I doubt not his experience will confirm what I have here advanced; for as one great injury to this tree proceeds from the too great effusion of sap at the wounded parts, by this autumn pruning this is prevented; for, at that season, all the parts of European trees which cast their leaves, are less replete with moisture than at any other time of the year; for by the long continuance of the summer's heat, the juices of plants having been exhausted in the nourishment and augmentation of wood, leaves, fruits, &c. and also great quantities being evaporated by perspiration, the root not being able to send up a supply equivalent to this great consumption, the branches must contain a much less quantity of sap than in the spring, when it has had several months supply from the root; which, though but small in proportion to what is sent up when the heat is greater, yet there being little or no waste, either by perspiration or augmentation, there must be a greater quantity contained in the branches; which also is easily to be observed, by breaking or cutting off a vigorous branch of a Fig-tree at both seasons, the sap, being milky, may be readily discerned, when that cut in autumn shall be found to stop its bleeding in one day's time, or less; whereas that cut in the spring will often flow a week or

more, and the wound will be proportionably longer before it heals.

Of late years some of these trees have been planted against fire-walls, which have succeeded very well where they have been properly managed; but where they have been kept too close, and drawn by glasses, they have not produced much fruit; therefore whenever this is practised, the heat should not be too great, nor the glasses, or other covering, kept too close, but at all times, when the weather is favourable, a good share of free air should be admitted; and if the trees are young, that their roots are not extended beyond the reach of the covering, they must be frequently watered when they begin to shew fruit, otherwise it will drop off; but old trees, whose roots are extended to a great distance, will only require to have their branches now and then sprinkled over with water. If these trees are properly managed, the first crop of fruit will be greater than upon those which are exposed to the open air, and will ripen six weeks or two months earlier, and a plentiful second crop may also be obtained, which will ripen early in september, and sometimes in august, which is about the season of their ripening in the warmer parts of Europe: but the fires should not be used to these trees till the beginning of february: because when they are forced too early, the weather is frequently too cold to admit a sufficient quantity of fresh air to set the fruit; but the covers should be put over the trees a month before, to prevent the shoots from being injured by the frost.

It may not be improper in this place to mention the great pains which the inhabitants of the Levant are at in the culture of their Figs; and without which (it is generally said by all travellers who have written on this subject, as also by Pliny, and other old naturalists) their fruit will fall off, and be good for nothing. I shall here set it down, as I find it in the travels of Mons. Tournefort*.

“ Pliny (says he) observed, That in Ceos now
“ Zia they used to dress the Fig-trees with much
“ care; they still continue to do so. To under-
“ stand aright this husbandry of Figs, called in
“ Latin, *Caprificatio*, we are to observe, that in
“ most of the islands of the Archipelago, they have
“ two sorts of Fig-trees to manage; the first is
“ called *Ornos*, from the old Greek, *Erinos*, a wild
“ Fig-tree; or *Caprificus*, in Latin; the second is
“ the domestic, or garden Fig-tree; the wild sort
“ bears three kinds of fruit, *Fornites*, *Cratitires*,
“ and *Orni*, of absolute necessity towards ripening
“ those of the garden Fig.

“ The *Fornites* appear in august, and continue to
“ november, without ripening; in these breed small
“ worms, which turn to a sort of gnats, no where
“ to be seen but about these trees. In october and
“ november these gnats of themselves make a punc-
“ ture into the second fruit, which is called *Crati-*
“ *tires*; these do not shew themselves till towards
“ the end of september; and the *Fornites* gradually
“ fall away after the gnats are gone; the *Cratitires*,
“ on the contrary, remain on the tree till may, and
“ inclose the eggs, deposited by the *Fornites*, when
“ they pierced them. In may the third sort of
“ fruit begins to put forth from the same wild Fig-
“ trees which produced the other two; these are
“ much bigger, and are called *Orni*; when they
“ grow to a certain size, and the bud begins to
“ open, they are pricked in that part by the gnats
“ of the *Cratitires*, which are in a proper state to
“ go from one fruit to the other, to discharge their
“ eggs.

“ It sometimes happens, that the gnats of the
“ *Cratitires* are slow to come forth in certain places,
“ while the *Orni* in those very places are disposed
“ to receive them; in which case the husbandman
“ is obliged to look for the *Cratitires* in another
“ place, and fix them at the end of the branches of
“ those Fig-trees, whose *Orni* are in fit disposition

* Letter 8.

“ to be pierced by the gnats ; if they miss the opportunity, the Orni fall, and the gnats of the Cratitires fly away. None but those that are well acquainted with this sort of culture, know the critical minutes of doing this ; and in order to it, their eye is perpetually fixed on the bud of the Fig ; for that part not only indicates the time that the flies are to issue forth, but also when the Fig is to be successfully pierced ; if the bud be too hard, and too compact, the gnat cannot lay its eggs, and the Fig drops when this bud is too open.

“ These three sorts of fruit are not good to eat ; their office is to help to ripen the fruit of the garden Fig-trees, in manner following : during the months of June and July, the peasants take the Orni at a time that their gnats are ready to break out, and carry them to the garden Fig-trees ; if they do not nick the moment, the Orni fall, and the fruit of the domestic or garden Fig-tree not ripening, will, in a very little time, fall, in like manner. The peasants are so well acquainted with these precious moments, that every morning, in making their inspection, they only transfer to their garden Fig-trees such Orni as are well conditioned, otherwise they lose their crop. It is true, they have one remedy, though an indifferent one, which is, to strew over the garden Fig-trees the Ascolimbros, a very common plant there, and in whose fruit there is a sort of gnats proper for piercing, perhaps they are the gnats of the Orni, which are used to hover about and plunder the flowers of this plant.

“ In short, the peasants so well order the Orni, that their gnats cause the fruit of the garden Fig-tree to ripen in the compass of forty days. These Figs are very good fresh ; when they would dry them, they lay them in the sun for some time, then put them in an oven to keep them the rest of the year. Barley bread and dried figs are the principal subsistence of the peasants and monks of the Archipelago : but these Figs are very far from being so good as those dried in Provence, Italy, and Spain ; the heat of the oven destroys all their delicacy and good taste ; but then, on the other hand, this heat kills the eggs which the flies of the Orni discharged therein, which eggs would infallibly produce small worms that would prejudice these fruits.

“ What an expence of time and pains is here for a Fig, and that but an indifferent one at last ! I could not sufficiently admire the patience of the Greeks, busied above two months in carrying these flies from one tree to another. I was soon told the reason, one of their Fig-trees usually produces between two and three hundred pounds of Figs, and ours in Provence seldom above twenty-five.

“ The flies contribute, perhaps, to the maturity of the fruit of the garden Fig-tree, by tearing the vessels in depositing their eggs ; and thus causing the nutritious juice to extravasate ; perhaps too, beside their eggs, they leave behind them some sort of liquor proper to ferment gently with the milk of the Fig, and to make their flesh tender.”

[Monsieur Jussieu doubts whether the succulency and turgescence of the esculent Fig be owing to the defluxion of the nutritious juice, occasioned by the punctures of the insects ; or to the impregnation of the seeds from the farina conveyed by them. The sexual botanists have adopted the latter cause, and regard it as one main prop of their system. Here, as in similar cases, two purposes are answered at once, the impregnation of the seed, and the ripening of the pulp.]

“ Our Figs in Provence, and even at Paris, ripen much sooner for having their eyes pricked with a straw dipped in olive oil. Plums and Pears, pricked by some insects likewise ripen much the faster for it ; and the flesh round such puncture is better tasted than the rest. It is not to be disputed but that considerable change happens to

“ the contexture of fruits so pricked, just the same as to parts of animals pierced with any sharp instrument.

“ It is scarce possible well to understand the ancient authors who have treated of caprification, or husbanding and dressing the wild Fig-tree, without being well apprised of these circumstances, the particulars whereof were confirmed to us not only at Zia, Tinos, Mycone, and Scio, but in most of the other islands.”

Fig-trees are propagated in England, either by the suckers, which are sent out from their roots, or by layers made, by laying down their branches, which in one year will put out roots sufficient to be removed, or by planting cuttings, which, if properly managed, will take root ; the first of these is a bad method, because all those trees which are raised from suckers, are very subject to send out great quantities of suckers again from their roots ; and the branches of the suckers are not so compact, as those of the layers, but are fuller of sap, and in greater danger of being injured by the frost ; those plants which are propagated by layers are the best, provided the layers are made from the branches of fruitful trees : for those which are made from the suckers, or shoots, produced from old stools, being very soft, and full of sap, are in danger of suffering by the frost, and these will shoot greatly into wood, but will not be very fruitful ; for, when trees have acquired a vicious habit while young, it is seldom they are ever brought to be fruitful afterwards ; therefore the shoots which are laid down, should be such as are woody, compact, and well ripened, not young shoots, full of sap, whose vessels are large and open.

The best time for laying down the branches is in autumn ; and if the winter should prove very severe, if they are covered with some old tan, or any other mulch, to keep the frost from penetrating the ground, it will be of great service to them ; by the autumn following, these will be sufficiently rooted for removing, when they should be cut off from the old plants, because at that season the branches not being so full of sap as in the spring, will not bleed so much as when cut off at that season. If the place is ready to receive them, the layers should be transplanted in autumn, where they are to remain ; but if it is not, then the layers may remain till the spring, provided they are separated from the old plants in autumn. As these plants do not bear transplanting well when they are large, it is the better way to plant them at first in places where they are to remain ; and after they are planted, the surface of the ground about their roots should be covered with mulch to keep out the frost ; and if the winter should prove very severe, it will be proper to cover the branches with Reeds, Peas-haulm, Straw, or some other light covering, which will prevent their tender ends being killed by the frost, which frequently happens where this care is wanting.

The other method of propagating these trees, is by cuttings, which should be taken from the trees in autumn, for the reason before given : these must be chosen from such branches as are compact, whose joints are near each other ; and they should have a part of the former year's wood at their bottom, and the top of each should be left entire, not shortened as is usually practised with other cuttings ; then they should be planted eight or nine inches deep, in a bed of loamy earth, in a warm situation, covering the surface of the ground, three or four inches thick, with old tanner's bark, to keep out the frost ; and in severe frost, their tops should be covered with Straw, Peas-haulm, Fern, or other light covering, to protect them from frost, these should be removed in the spring ; but the tan may remain, for that will prevent the drying winds of the spring, and the sun in summer, from penetrating the ground, and will be of great use to secure the cuttings from injury ; these cuttings will be rooted sufficiently by the following autumn, when they should be trans-

transplanted, and treated in the same manner as the layers.

If fruitful branches of these trees are cut off, and planted in pots, or tubs, filled with good earth, and these are plunged into a good hot-bed of tanner's bark in the stove, they will put out fruit early in the spring, which will ripen in the middle of may.

2. &c. The other sorts are preserved in several curious gardens; they are easily propagated by cuttings during the summer season. When the cuttings are taken from the plants, they should be laid in a dry shady place for two or three days, that the wounds may be healed over, otherwise they are apt to rot; for all these plants abound with a milky juice, which flows out whenever they are wounded; for which reason, the cuttings should have their wounded part healed over and hardened before they are planted; after which they should be planted in pots filled with sandy light earth, and plunged into a moderate hot-bed, where they should be shaded from the sun, and two or three times a week gently refreshed with water, if the season is warm; but they must not have too much moisture, for that will infallibly destroy them. When the cuttings have taken root sufficient to transplant, they should be each planted into a separate small pot filled with light undunged earth, and plunged into the hot-bed again, being careful to shade them until they have taken fresh root; then they should have a large share of free air admitted to them at all times when the weather is favourable, to prevent their drawing up weak, and to give them strength before the cold comes on. In autumn the pots should be removed into the stove, and plunged into the tan-bed, where they should constantly remain, and must be treated in the same manner as other tender plants from the same countries; for although two or three of the sorts may be treated in a hardier manner, yet they will not make much progress.

[Ficus. See *Carica* and *Cecropia*.

—— *aizoides* & *capensis*. See *Mesembryanthemum*.]

—— *indica*. See *Cactus*, [and *Musa*.

FIDDLE-DOCK. See *Rumex*.

FIDDLE-WOOD. See *Citbarexylum*.

FIELD BASIL. See *Thymus Acinos*.

FIELD MADDER. See *Sherardia*.

FIG, INDIAN. See *Cactus*.

FIG, Infernal. See *Argemone*.

FIG-MARIGOLD. See *Mesembryanthemum*.

FIG, Pharaoh's. See *Ficus* and *Musa*.

FIG-TREE. See *Ficus*.

FIG-WORT. See *Scrophularia*.]

FILAGO. (From *Filum*, thread; the leaves being white, and covered with a kind of cotton or thread: hence in English it is called by some Cotton-weed.)

[*Lin. gen. n.* 995. *Reich. n.* 1079. *Schreb.*

n. 1345. *Vaill. aet. gall.* 1719. *f.* 6, 7. *Juss.*

179. *Gertn. t.* 166. *Gnaphalium. Vaill. aet.*

gall. 1719. *Evax. Gertn. t.* 165.

Class. 19. 4. Syngenesia Polygamia Necessaria.

Nat. order of *Compositae Nucamentaceae*.—*Corymbiferae* *Juss.*

GENERIC CHARACTER.

CAL. Common of imbricate chaffs, containing in the disk several hermaphrodite florets; in the circumference among the lower scales of the calyx solitary female florets.

COR. Hermaphrodite funnel-form, with a four-cleft erect border. Females scarcely visible, filiform, very narrow, cloven at the mouth.

STAM. in the hermaphrodite. Filaments four, capillary, small. Anther cylindric, four-toothed at the top.

PIST. in the hermaphrodite. Germ scarcely any. Style simple. Stigma acute, bifid.—In the females germ ovate, largish, depressed. Style filiform. Stigma acute, bifid.

PER. none.

SEEDS in the hermaphrodites none.—In the females obovate, compressed, smooth, small. Down none.

REC. Disk naked without chaffs, but at the sides there are calycine chaffs separating the florets.

Obs. The above character is taken from *F. pygmæa* or *acaulis*, which *Gærtner* separates under the name of *Evax*:—*F. germanica*, *arvensis*, *montana*, and probably other species agree together, and are distinguished from that by the following character.

CAL. Common round or five-cornered, imbricate: scales ovate-lanceolate; the outer acute, tomentose, the inner shining, coloured, acuminate.

COR. Compound: corollets hermaphr. tubular few in the centre of the disk: females tubular numerous in the remainder of the disk; and a few others, almost apetalous among the outer scales of the calyx.

Proper in the hermaphrodites funnel-form, with a four-cleft spreading border:—in the females of the disk funnel-form, with a slender tube swelling at the base, and a four-cleft erect border;—in the other females hardly conspicuous, with a very slender tube, and a sharp cloven border.

STAM. in the hermaphr. Filaments four very short. Anther tubular.

PIST. in the hermaphr. Germ small abortive. Style capillary, the length of the border. Stigmas two, from upright spreading.

Females in the disk have an oblong germ; a capillary style longer than the border, and two spreading stigmas.

Females within the calyx have an oblong germ; a capillary style longer than the border, and two long spreading stigmas.

PER. none. Calyx unchanged.

SEEDS in the hermaphrodites barren, crowned with down:—in the females of the disk oblong, crowned with a short simple down:—in the females within the calyx oblong, naked.

REC. naked*.

ESSENTIAL CHARACTER.

Cal. imbricate. Female florets among the scales of the calyx. Down none. Recept. naked.

SPECIES.

1. *Filago acaulis*. Pygmy Cudweed.

Lin. syst. 795. *Reich.* 3. 939. *Allion. pedem.* n. 620. *Krock. files. n.* 1471. 2. t. 41.

F. pygmæa. Lin. spec. 1311. *Loefl. itin.* 165.

Gouan monsp. 465. *Cavan. hisp.* 23. n. 38. t. 36.

Evax umbellata. Gertn. fruct. 2. 393.

Gnaphalium. Vaill. aet. 1719. 314.—*roseum. Bauh. pin.* 263. *prodr.* 122. *Barrel. ic.* 127.—*umbellatum minimum. Bauh. hist.* 3. 162.

Flowers stemless sessile, floral leaves larger.

2. *Filago germanica*. Common Cudweed.

Lin. spec. 1311. *Reich.* 939. *Gertn. fruct.* 2. 404.

Relb. cant. n. 636. *Lightf. scot.* 501. *Neck.*

gallob. 365. *Pollich pal. n.* 830. *Leers herb. n.* 677.

Hall. belv. n. 153. *Krock. files. n.* 1472.

Villars dauph. 3. 194.

F. pyramidata. Lin. suec. n. 779.

Gnaphalium germanicum. Lin. lapp. n. 299. *Hudf. angl.* 362. *With.* 898. *Scop. carn. n.* 1050.

Gnaphalium. Fuchf. 222. *ic.* 125.—*vulgare. Camer. epit.* 606.—*majus. Bauh. pin.* 263. *Raii hist.*

295. *Mor. hist. f.* 7. t. 11. f. 10.—*minus, f. herba*

impia. Park. theat. 685. 3. *Raii syn.* 180. 3.

Petiv. brit. t. 18. f. 9, 10.

Filago, f. herba impia. Ger. 517. 9. *emac.* 642. 10.

Panicle dichotomous, flowers rounded axillary hirsute, leaves sharp.

3. *Filago pyramidata*. Pyramidal-flowering Cudweed.

Lin. spec. 1311. *Reich.* 940. *Krock. files. n.* 1473.

D'Asso aragon. n. 877. *Villars dauph.* 3. 194.

Gnaphalium medium. Bauh. pin. 263. *Barrel. ic.* 128. n. 5.

Stem dichotomous, flowers pyramidal five-cornered axillary, female floscules serrate.

4. *Filago montana*. Leaf Cudweed.

Lin. spec. 1311. *Reich.* 940. *Fl. suec. n.* 780.

Relb. cant. n. 637. *Lightf. scot.* 502. *Hall.*

belv. n. 155. *Pollich pal. n.* 831. *Leers herb. n.* 678.

n. 678. Krock. files. n. 1474. Villars dauph. 3. 194.

Gnaphalium montanum. Hudf. angl. 362. With. 897.

G. minus repens. Baub. pin. 263. — minimum. Lob. ic. 481. 2. Baub. hist. 3. 159. Raii hist. 296. syn. 181. Petiv. brit. t. 18. f. 11. — erectum. Mor. f. 7. t. 11. f. 3.

Filago minor. Ger. 517. 8. emac. 641. 9.

Stem subdichotomous erect, flowers conical terminating and axillary.

5. *Filago gallica*. Grass-leaved Cudweed.

Lin. spec. 1312. Reich. 940. Hall. helv. n. 156.

Pollich pal. n. 832. Krock. files. n. 1475. 2.

t. 42. Villars dauph. 3. 195. Gouan illustr. 74.

Gnaphalium gallicum. Hudf. angl. 361. With. 897.

Petiv. brit. t. 18. f. 12. Pluk. alm. t. 298. f. 2.

Raii syn. 181. 5.

F. vulg. tenuissimo fol. erecto. Tourn. inst. 454.

par. 1. 142.

Stem dichotomous erect, flowers subulate axillary, leaves filiform.

6. *Filago arvensis*. Corn Cudweed.

Lin. spec. 1312. Reich. 940. Fl. suec. n. 781.

Hall. helv. n. 154. Pollich pal. n. 833. Leers

herborn. n. 679. Krock. files. n. 1476. Villars

dauph. 3. 195. Ger. prov. 210. n. 1.

Gnaphalium majus, angusto oblongo folio. Baub.

pin. 263?

G. arvense. Scop. carn. n. 1051.

Filago incana tomentosa erecta. Vaill. aet. 1719.

p. 391.

F. vulgaris, flor. per caulem sparsis. Tourn. par.

1. 141.

Stem panicle, flowers conical lateral.

7. *Filago Leontopodium*. Lion's-foot Cudweed.

Lin. spec. 1312. Reich. 941. mant. 481. Hall.

helv. n. 152. Jacqu. vind. 150.

Gnaphalium Leontopodium. Scop. carn. n. 1045.

ann. 2. 63. Jacqu. austr. t. 86. Villars dauph.

3. 191.

G. alpinum. Clus. hist. 1. 368. — pulchrum. Baub.

hist. 3. 161. Raii hist. 296. — magno flore, folio

oblongo. Baub. pin. 264.

Leontopodium. Matth. 1193. Tabern. ic. 393.

Dod. pempt. 68. — parvum. Ger. 518. f. 11.

β. *Gnaphalium alpinum magno flore folio brevis*.

Baub. pin. 264. Raii hist. 296.

G. alp. pulchri aliud genus. Baub. hist. 3. 161.

Leontopodium. Ger. 518. 10. emac. 642. 11. —

majus. Park. theat. 684.

Stem very simple, head of flowers terminating radiated with very hirsute bristles.

DESCRIPTIONS, &c.

The Cudweeds are herbs covered with a hoary or cottony down. The flowers are usually glomerate at the end of the stalk, and are sometimes surrounded by a leafy ring. They are of the same natural genus with *Gnaphalium*, and are joined with it by Scopoli, &c. The first differs from the rest in the shape of the receptacle, in having very few androgynous florets and all the seeds bald or naked.

1. A very small plant, covered entirely with a white woolly nap, growing in a tuft. It has a little bristle-form stem, a line or two, sometimes half an inch, or at most an inch in height, erect, quite simple. Leaves mostly close to the ground, longer than the stem and flowers, quite entire, linear. One or two flowers terminate the stem, or are sessile among the leaves. Calyx scarcely a line in length; the scales brown or reddish brown about the edge, ash-coloured in the middle: the corollers are rose-coloured, and the central ones yellowish*.

According to Allioni, the seeds are crowned with a little membrane, and not with a pappus or down; and the receptacle is scaly.—Linneus affirms that it very seldom shoots up into stalk; and that the flowers are sessile close to the ground within a ring of leaves*.

* Krock.

* Linn. syst.

Cavanilles, with a zeal truly laudable, has defended Linneus from the intemperate and ill-founded attack of Monf. Lamarck upon him respecting this plant, and has retorted it upon the assailant. He informs us that he has found caulescent plants about Madrid, accompanied by innumerable others absolutely stemless, both flowering, fruiting and perishing without any change from one to the other. In the latter case, the leaves are numerous, linear ovate, spread out in form of a rose on the ground, the outer ones longer, the whole diameter an inch and half; from six to nine flowers are placed in the centre or near it, without any certain order. In the former case, there is sometimes one stem, sometimes several, and those even branched; stem-leaves sessile, numerous, sublinear, broader at the end and blunt, those which surround the flowers are in form of a rose and larger, being a sort of involucre; very frequently the stem at top is divided into a sort of corymb, of unequal branchlets from six to nine, never so long as an inch. Calycine scales pellucid, smooth, with a divaricating bristle at top: hermaphrodite florets five (seven to ten, G.) barren, naked, five-parted (four-toothed, G.); segments reflex, acute; in the females none. Receptacle acutely conical, naked (chaffy, G.) Down none.

Krock and Cavanilles have given two figures of it, one in its sessile, and another in its caulescent state.

Native of the South of Europe, and of the Levant, in dried pools of water. Annual. Flowering at the end of summer.

2. Root annual, spindle-shaped. Several stems rise immediately from the root, from six to twelve inches in height, the central one thickest and longest, clothed with numerous, linear-lanceolate, waved, sessile, downy leaves. At the summit a sessile flowering head, beneath which are two or more branches bearing flowers, and these again proliferous*. The lower lateral branches overtopping the principal central head, gave occasion to the old name of *Herba impia*.

Calyxes pyramidal, five-cornered, scales sharp, shining, brown with yellowish edges*. Florets of three sorts: 1. Two or three in the centre hermaphrodite; the border four-cleft, spreading; stigmas from erect patulous, the length of the border; germ small, abortive, with a short simple down. 2. On the sides of the disk numerous, female; tube slender swelling at the base; border four-cleft, erect; stigmas patulous, longer than the border; seed fertile, with a down like the other. 3. Between the scales of the calyx, five or seven, female; tube scarcely visible with a glass; border bifid, sharp; style longer than the border, with long, spreading stigmas; seed oblong, fertile, without any down*.

The description of Dr. Stokes differs in some points.—Flowers conical, sessile, yellowish brown. Heads solitary, surrounded with scattered leaves. Filaments four; anthers with two bristles at the base, as in *Inula*. Seeds in the disk oblong, compressed, greenish brown, beset with white pellucid glands, crowned with down; those between the outer scales of the calyx abortive.—Dr. Withering adds, that the germs in all the florets are rough and have a down.

According to Gartner, the receptacle is narrow, flat, hollow-dotted, naked and smooth. Seeds small, obovate, compressed a little, having little bristles scattered over them, pale. Down capillary, with eighteen rays, three times as long as the seed, and scarcely toothed.

Native of most parts of Europe, in barren pastures, corn fields, and by way sides: flowering in July and August.

This plant is astringent; and a powder or decoction of it has sometimes been given to cattle in the bloody flux; and has been tried with success in similar complaints of the human body. Farmers in England formerly gave it their cattle to restore the

* Woodw. Mss.

* Lightfoot.

* Leers.

faculty of chewing the cud, whence it acquired the English name of Cudweed^f. It is also called Chafe-weed. Gerarde calls it *Herb impious*, or *wicked Cudweed*. Petiver names it *childing Cudweed*; and Hill, *forked Cudweed*.

Mr. Hudson observes that it varies with a very simple erect stem, and axillary sessile flowers.

3. Stem one or two inches high, erect, little branched; Branches radical, bifid at the top. Leaves lanceolate, bluntish, pressed to the stem, quite entire. Flowers from the forks and at the end of the stalk, sessile, five-cornered and pyramidal, tomentose as is the whole plant, aggregate; surrounded with leaves^g. Calycine scales three or four terminated by a thread, and between them a female flower, besides six males or imperfect hermaphrodites in the centre^h.

It is probably no more, says Krocker, than a variety of the foregoing species. It differs however from it, in having a more simple stem, with only one branch or two at the end, and more erect: it is also more white and tomentose. The flowers are only at the end and in the uppermost fork. The leaves are more numerous, and pressed close to the stem. It is annual, like the foregoing, and flowers in august.

Native of the South of France, Spain, and Silesia.

4. Root annual. Stem two to six inches high, erect, much branched, leafy, downy. Leaves numerous, lanceolate, sessile, downy, pressed to the stem, three or four lines longⁱ. Heads of flowers roundish, sometimes from the sides, with from three to five (or two to four) flowers in each. Calyx pyramidal, five-cornered, sessile or on very short peduncles, of a whitish green colour, shining at the top. In the very centre are four complete florets; about fifteen in the disk, and four or five in the circumference, within the scales of the common calyx, with pistils only, all fertile. Anthers of the complete florets four, with two bristles at the base. Border of the florets four-cleft. Seeds of all the florets in the centre sprinkled with very short glandular hairs, and crowned with a capillary down; those of the florets in the circumference very smooth and without a down^k. The smallness of the heads or clusters, and the few flowers which compose them, readily distinguish this species from the second^l.

Native of most parts of Europe in sandy pastures, especially in high grounds; also on walls and other dry barren places. It flowers in july and august.

5. Root annual, often very long. The whole plant downy, but the down shorter than in the second and fourth species, and of a silvery white. Stem from half a span to a span in height, leafy, much branched. Leaves about an inch long, half-stem-clasping, awl-shaped^m, subtomentose, yet smooth and not hirsuteⁿ. Flowers of both sexes scattered among the leaves over most parts of the stem, almost always solitary, sometimes on very short petioles, glomerate, greenish white, conical, narrower than in the other species. The calyx continues, and when the plant is in a state of maturity expands and forms a ring, as in *Gnaphalium stellatum*^o.

Native of France, Switzerland, Germany, England, in gravelly and sandy soils: flowering in july and august. With us it is not common; but was first observed by Mr. Dale near Castle-Heveningham in Essex; and since by Mr. Woodward on heaths in Derbyshire.

6. Root annual. The whole plant very woolly, inasmuch that the heads of flowers are in a manner buried. Stem erect, a foot or eighteen inches in height, branched only at top. Leaves linear-lanceolate, two lines broad, five to seven long, and quite entire. Flowers glomerate, usually terminating, whitish. Scales of the calyx linear, awned. Seed downy, except in the hermaphrodites. The flowers

are female in the circumference, androgynous in the centre, and very small^p.

Native of Sweden, Germany, France, Switzerland, Carniola, in sandy soils; flowering in july and august.

7. Height about six inches; the whole plant hoary, and terminated by an elegant lanuginous star formed of oblong spreading leaflets of unequal lengths. In the centre of this is a head of flowers which are hermaphrodite, the corolla yellow and five-cleft, the anthers acuminate; the style whitish, the germ streaked smooth dilated at the end and crowned with little bristles, which when viewed with a magnifier appear feathered, the stigma longer than the anthers. Round this principal head on radiating very lanuginous bristles sit other smaller heads in number as far as seven, in which some of the flowers are female small four-cleft, with a long style and a bifid stigma; others are incomplete, yellow, and destitute of genuine stamens, style and germ. The middle head therefore is that of a *Gnaphalium*, and the side ones are those of a *Filago*^q. Perennial. It flowers in june and july.

Native of the mountains of Germany, Dauphiné, Switzerland, (where Ray found it on la Dolaz, one of the high points of mount Jura) the Valais, Austria, Carinthia, Carniola. Introduced in 1776, by Professor de Saussure^r.

8. This differs from the other; 1. in having a slender root and short leaves, whereas that has a large root and oblong leaves: 2. in having flowers of a very dark brown violet colour, whereas in the other they are pale yellow.

Native of Italy, as on monte Baldo near Verona, and in Germany. Probably in no wise different from the other^s.

PROPAGATION AND CULTURE.

All these, except the last, are annual plants, and being considered as weeds, are never cultivated except in botanic gardens. They may be propagated from seeds sown in the autumn or spring, where they are to remain; and require no culture but to be thinned where they are too close, and to be kept clean from weeds.

FILAGO. See *Athanasia*, *Gnaphalium*, and *Micropus*.]

FILBERT. See *Corylus*.

[FILICASTRUM. See *Osmunda*.

FILICIFOLIA. See *Xylophylla*.

FILICIS FOLIO. See *Acrostichum*.

FILICULA. See *Acrostichum*.]

FILIPENDULA. See *Pedicularis* and *Spiraea*.

[FILIX, (from *filum*, a thread) or Fern.

The plants that pass under this general denomination, constitute the first order of the class Cryptogamia in the system of Linneus, called CRYPTOGRAMIA FILICES. The fructification in this natural order differs essentially from all others, at least in its situation: being generally disposed either in spots or lines on the under surface of the fronds or leaves. There being no certain distinctions in the fructification sufficient to establish the genera, and the parts being too small to be observed without the assistance of considerable magnifiers, the genera are chiefly distinguished by the disposition of the seeds under their covers.

The general structure of the fructification in this order is the following. The calyx is a scale, springing out of the leaf, opening on one side. Under this scale, commonly supported upon little footstalks, but sometimes sessile, are *globules* for the most part encompassed by an elastic ring; these burst with violence, and scatter a powder, which is supposed to be the seed. These globules or seed-vessels are covered by a very fine, thin, semitransparent skin, which bursts open before the seeds are ripe. When they are ripe, the ring or cord endeavours to become straight, and by its elasticity tears open the capsule, which then forms two hemispherical cups, like that of the *Anagallis*. This curious mechanism

^f Lightfoot, Withering, Ray. ^g Linn. spec. D'Affo, Krocker.
^h Villars. ⁱ Woodw. Mfs. ^k Stokes in With.
^l Ray. ^m Woodw. Mfs. ⁿ Linn. ^o Krocker.

^p Scopoli, Krocker, Leers, Haller. ^q Scopoli. ^r Hort. kew.
^s Ray.

may be observed by the assistance of a good single microscope, with a reflecting speculum, during the months of September and October, in *Pteris aquilina*, or common Brakes, and *Asplenium Scolopendrium* or Hart's-tongue. The powder which is dispersed in this operation is so minute as hardly to be visible to the naked eye*. That it is the seed has been proved by actually raising plants from that of the Hart's-tongue, by Morison; and lately in the most satisfactory manner by Mr. John Lindsay, surgeon in Jamaica, from *Polypodium lycopodioides*†. Hedwig thinks that he has detected male flowers, or anthers, either sessile, or else on a very short filament, scattered over the back of the frond, of an ovate or subglobular form.

From this singularity of the fructification being on the back or lower side of the leaf, the older botanists named the order in which they ranged the Ferns, *Epiphyllispermæ* and *Dorsiferae*.

Since the late discoveries of Hedwig and others, *Equisetum*, *Salvinia*, *Marfilea*, *Pilularia*, *Isoetes*, which stood among the Ferns, together with *Lycopodium* and *Porella*, which were placed in the order of Musci by Linneus, have been united to form a new order, entitled MISCELLANÆ, which now stands first of the class Cryptogamia, in Linneus's *Genera Plantarum*, as published by Schreber.

The uses of the Ferns are little known. Few of them are esculent. They have a disagreeable heavy smell. In large doses they destroy worms; and some of them are purgative. The ashes produced by a slow incineration of the green plants, contain a considerable portion of vegetable alkali, and are generally sold under the name of Ash-balls, to make lye for washing linen*. Common brakes, cut down when fully grown and dried, makes very good litter; and this, with some others, forms a thatch more durable than straw.

South America and the West India islands furnish abundance of species, many of which grow to a great size, and others are very ornamental plants in our hot-houses.

For particulars concerning the genera and species of this order, see *Acrostichum*, *Adiantum*, *Asplenium*, *Blechnum*, *Cenopteris*, *Hemionitis*, *Loucheitis*, *Marrattia*, *Meniscium*, *Onoclea*, *Ophioglossum*, *Osmunda*, *Polypodium*, *Pteris* and *Trichomanes*.

FINGRIGO. See *Pisonia*.

FINOCHIO. See *Anethum*.]

FIR-TREE. See *Pinus*.

[FISSIDENS, *Hedw. fund. 2. 91.*—*Dicranum*. *Schreb. gen. n. 1644.* A genus comprehending several species of Moss, belonging to Linneus's genera of *Mnium*, *Bryum* and *Hypnum*.

FISTULA. See *Cassia*.

FISTULARIA. See *Pedicularis*.

FITT-WEED. See *Eryngium*.

FLACOURTIA: (In memory of Stephen de Flacourt, of Orange, who first sketched out in 1661 a natural history of Madagascar.)

L'Herit. stirp. nov. t. 30, 31. Juss. 291. Lin. gen. Schreb. 1546.

Class. 22. 11. Dioecia Polyandria.

Nat. order of *Tiliaceæ* Juss.

GENERIC CHARACTER.

Male.

CAL. Perianth one-leaved five-parted: parts roundish, obtuse, almost equal, from spreading erect.

COR. none.

STAM. Filaments numerous (fifty to one hundred) longer than the calyx, and fastened to its thickened bottom, spreading, capillary. Anthers roundish.

PIST. the rudiment of a germ and stigma at most.

Female.

CAL. Perianth five-leaved: leaflets roundish, erect, lying over each other at the edge, blunt.

COR. none.

PIST. Germ superior, ovate, large. Style none. Stigma flat, stellate, with rays from five to nine.

* Withering.

† Linn. trans. 2. 98.

* Withering.

PER. Berry globular, fleshy, umbilicate with the stigma, many-celled.

SEEDS in pairs, obovate, compressed, obscurely grooved.

ESSENTIAL CHARACTER.

MALE. Cal five-parted. Cor. none. Stam. very numerous.

FEM. Cal. many-leaved. Cor. none. Germ superior. Styles five to nine. Berry many-celled.

SPECIES.

1. *Flacourtia Ramontchi*.

L'Herit. stirp. nov. 59. t. 30. Ait. hort. kew. 3. 413.

Alamotou. Flac. mad. 124.

Flacurtia madecassia. Commerf. Mss.

DESCRIPTION, &c.

It is a small tree or rather shrub, very bushy, thorny, and growing to the height of eight or ten feet. Stem erect, branching, round, leprous, ash-coloured. Branches with their subdivisions alternate, patulous, round, thorny, dotted with tubercles, bay-coloured. Suckers at first without thorns, but soon acquiring them, scarcely pubescent, purplish. Thorns lateral or axillary, solitary, subulate, patulous, longer than the petiole, the upper ones gradually smaller. Leaves alternate, petioled, spreading, ovate or oval, sharp, crenulate-serrate, almost entire at the base, smooth and shining, of a firm texture, and resembling those of the Plum: the midrib beneath very little prominent, and the veins hardly visible; flat, bright green, sometimes purplish about the edges, eighteen to twenty-four lines long, and fifteen to twenty lines broad: petioles one-sixth of the length of the leaves, round, pubescent, red. Racemes terminating, erect, peduncled. Flowers two to seven pedicelled. The males ochroleucous, four lines in breadth: in the garden only one or two in a raceme, the lateral flower mostly abortive: females herbaceous yellowish, one or two lines in diameter: in the garden solitary. The fruit is the size and shape of a small Plum, green when young, of a beautiful red when ripe, and finally of a dark violet colour: the skin is very thin, and the flesh transparent red, of the same consistence with our common Plums: in the middle are a dozen or fourteen small kernels, the size of those in the apple, and nearly of the same shape; they are bitterish, like our Apricot kernels, and covered with a tender shell. The natives eat the fruit; it is sweet, but leaves a slight sharpness in the mouth. An island on the coast of Madagascar is covered with these trees; and because they resemble the European Plum tree, the sailors have named the island *Isle aux Prunes*, or *Plum-tree Island*.

This tree was first observed by M. Poivre and M. Commerfon on the island of Madagascar. Both male and female trees have flowered in the Paris garden, but have been hitherto barren: they have not however yet been observed to flower at the same time^a.

M. L'Heritier has given two plates, the first representing the plant as it appears in the greenhouse, and the second the plant in its wild state.

It was introduced here in 1775, by Mons. Richard, and flowers in June and July^b.

FLAG, Common. See *Iris*.

—, Corn. See *Gladiolus*.

—, Sweet. See *Acorus*.

FLAGELLARIA. (From the form of the leaves like a scourge.)

Lin. gen. n. 450. Reich. n. 486. Schreb. n. 614.

Juss. 41. Gertn. t. 16?

Class. 6. 3. Hexandria Trigynia.

Nat. order of *Tripetaloidæ*. *Asparagi* Juss.

GENERIC CHARACTER.

CAL. Perianth six-leaved, (six-parted, *syft.*) equal, (spreading-bell-shaped, *Juss.*): leaflets ovate, permanent, the outer ones sharper, (all concave, *G.*)

COR. none.

STAM. Filaments six, filiform, almost the length of the calyx. Anthers oblong.

^a L'Heritier and Poivre.

^b Hort. kew.

Pist. Germ ovate, very small. Style length of the stamens, trifid. Stigmas three, simple, flattish, permanent.

PER. Drupe (berried, *G. Berry*, *syft.*) roundish, one-celled, crowned with the flower, (superior, three-celled, *G.* three-seeded, two frequently abortive, *f.*)

SEED, a round stone or nucleus.

ESSENTIAL CHARACTER.

Cal. six-parted. *Cor.* none. Berry (or Drupe) one-seeded, (two cells of the nucleus small and abortive).

SPECIES.

1. *Flagellaria indica*.

Lin. spec. 475. *syft.* 348. *Reich.* 2. 124. *Fl. zeyl.* n. 133. *amam.* 1. 398. *Rumph. amb.* 5. 120. t. 59. f. 1. *Rheed. mal.* 7. 99. t. 53. *Raii suppl.* 573. 1. *Burm. zeyl.* 35. 1. *Lour. cochinch.* 211.

Stem round, climbing; leaves ovate terminated by a tendril.

2. *Flagellaria repens*.

Lour. cochinch. 212. *Rumph. amb.* 5. 490. t. 184. f. 1.

Stem angular creeping, leaves jointed in pairs.

DESCRIPTIONS, &c.

1. A shrub taller than a man. Branches distich, scaly or sheathed at the base. Leaves ending in a tendril, as in *Gloriosa*, all protected by a long entire sheath. Flowers in a panicle at the end of the stem. It seems to bear a near affinity to the Cane and Rushes^c.

Loureiro thus describes it. Stem perennial, round, twenty feet high, climbing, with few branches. Leaves simple, oblong-ovate, acuminate, three-nerved, smooth, alternate, on sheathing, unarmed petioles. Flowers white, in a loose terminating raceme. Calyx six-parted. Stamens eight, short. Fruit a smooth red berry, juicy, and inclosing one seed.

Gærtner (p. 61.) has described a fruit under the name of *Flagellaria*, which he supposes to be different from this of Linneus's.

Native of the East Indies, Cochinchina, and of Guinea. Introduced in 1782, by the Earl of Tankerville and Dr. Pitcairn^a.

2. Stem perennial, twelve feet high, branched, unarmed, subparasitical, or creeping up trees by lateral fibres, but preserving its original root. Leaves linear, appendicled at the middle joint, smooth, alternate, half-stem-clasping. Flowers terminating, with a long bundled spadix, and a linear common spathe. Calyx none. Stamens six, dilated at the base. Stigma sessile, three-parted. Berry smooth, red, inclosing one seed.

Native of Cochinchina.—Rumphius has two other species figured in the same plate 184^c.

PROPAGATION AND CULTURE.

Sow the seeds in small pots of light earth, plunge them in the bark-bed: when they are fit to transplant, place them single in small pots, shading them till they have struck root, and watering them gently.

FLAMMA. See *Ixora*.]

FLAMMULA. See *Clematis*, [*Pavetta* and *Ranunculus*.]

FLAX. See *Linum*.

—, Toad. See *Antirrhinum Linaria*.

FLEA-BANE. See *Conyza*, *Erigeron*, and *Inula*.

FLEA-GRASS. See *Carex*.

FLEAWORT. See *Plantago*.

FLIX-WEED. See *Sisymbrium Sophia*.

FLOS ADONIS. See *Adonis*.

— **AERIS.** See *Epidendrum*.]

— **AFRICANUS.** See *Tagetes*.

[— **CÆRULEUS.** See *Clitoria*.

— **CARDINALIS.** See *Ipomoea*.

— **CLITORIDIS.** See *Clitoria*.

— **CUCULI.** See *Cardamine*.

— **GLOBOSUS.** See *Gomphrena*.]

— **PASSIONIS.** See *Passiflora*.

[— **PERGULANUS.** See *Pergularia*.

— **REGIUS.** See *Delphinium*.]

— **SOLIS.** See *Cistus* and *Helianthus*.

[— **SUSANNÆ.** See *Orchis*.]

^a Linn. and Jussieu.

^b Hort. kew.

^c Loureiro.

FLOS TRINITATIS. See *Viola*.

— **VESTIVALIS.** See *Hibiscus*.

FLOWER-DE-LUCE. See *Iris*.

FLOWER-FENCE. See *Adenanthera*.

FLOWER-GENTLE. See *Amaranthus*.

FLOWERING-FERN. See *Osmunda regalis*.

FLOWERING RUSH. See *Butomus*.

FLUELLIN. See *Antirrhinum*, and *Veronica*.

FLUVIALIS. See *Najas*.

FLY HONEYSUCKLE. See *Halleria* and *Lonicera*.

FLY ORCHIS. See *Ophrys*.

FOENICULUM. See *Anethum*, *Cribmum*, *Pimpinella*, *Seseli*, *Sison*.]

FOENUM BURGUNDICUM. See *Medicago*.

— **GRÆCUM.** See *Ononis*, *Trifolium*, and *Trigonella*.

[**FONTANESIA.** (So named by Billardiere in honour of Mons. Desfontaines, of the royal academy of sciences at Paris.)

Billardiere ic. syr. t. 1.

Class. 2. 1. *Diandria Monogynia*.

Nat. order of Sepiariæ. Jasmineæ Juss.

GENERIC CHARACTER.

CAL. four-parted, inferior, very small, permanent, blunt at the ends.

COR. two-petalled: petals two-parted, parts ovate obtuse concave.

STAM. Filaments two, long, filiform, inserted into the claws of the corolla. Anthers oblong, two-grooved.

PIST. Germ ovate. Style compressed, shorter than the stamens. Stigmas two, inflex-hooked.

PER. Capsule, not opening, subovate, emarginate, compressed-membranaceous, in the centre two-celled (very rarely three-celled, three-winged.)

SEEDS solitary, oblong-columnar.

ESSENTIAL CHARACTER.

Cal. four-parted, inferior. Petals two, two-parted. Caps. membranaceous, not opening, two-celled, cells one-seeded.

SPECIES.

1. *Fontanesia phillyreoides*.

Billard. syr. dec. 1. p. 9. t. 1.

Leaves ovate-oblong sharp at both ends, flowers in racemes.

DESCRIPTION, &c.

Stem frutescent, erect, twelve feet high. Branches opposite, erect, the younger ones quadrangular. Leaves evergreen, opposite, veined underneath; the lower ones ovate: petioles short, knee-jointed. Flowers axillary yellow.

The corolla may be considered as one-petalled and four-parted, with two of the parts more deeply cut, for the filaments are inserted into the corolla. It is allied therefore to *Fraxinus* and *Chionanthus*: but it differs from the first in having a two-celled fruit; from the second in the fruit being a capsule, not a drupe.

Native of Syria, between Laodicea and mount Cassius^f.

FONTILAPATHUM. See *Potamogeton*.

FONTINALIS, (a fonte. These mosses usually growing in springs.)

Lin. gen. 1190. *Schreb.* 1655. *Dill. musc.* 254.

Cryptogamia Musci, or Mosses.

GENERIC CHARACTER.

Capsule oblong, with the mouth ciliate; opening with an acuminate lid; covered with a sessile, smooth, conical veil; and included in a pitcher-shaped; imbricate perichætium.

SPECIES.

Only four species are recited in *Syst. veget.* They are all natives of England, and may be found in Mr. Hudson's *Flora Anglica*. The three first, viz. *F. antipyretica*, *minor*, and *squamosa*, are water-mosses: the last, *F. pennata* grows on trees.

Dr. Withering has two more species, *F. capillacea*, *Dillen.* 33. 5. *Dickson,* 2. 1. and *alpina*, *Dicks.* 2. 4. 1.

Several new species have been discovered by Swartz in the West Indies; and one in Cochinchina by Loureiro.

^f Billardiere

FONTINALIS. See *Bryum*, *Polygonum amphibium*, and *Potamogeton*.

FOOL'S-PARSLEY. See *Æthusa*.

FORSKÖHLEA. (So named in memory of Peter Forskähl, a Swede; born in 1732; he was Professor at Copenhagen; travelled at the expence of the King of Denmark into Egypt and Arabia; and died in the latter, of the plague, on the 11th of July, 1763.)

Lin. gen. Reich. n. 639. Schreb. n. 687. mant. 11.

Gärtn. t. 68. Juss. 403. Caidbeja. Forsk. flor. 82.

Class. 8. 4. Octandria tetragynia.

— 10. 4. Decandria pentagynia.

Nat. order of *Urticæ* Juss.

GENERIC CHARACTER.

CAL. Perianth four or five-leaved, erect: leaflets linear-lanceolate, parallel, acute, permanent.

COR. Petals eight or ten, rude, spatulate, concave, erect, withering, shorter than the calyx, the claws the length of the border.

STAM. Filaments eight or ten, filiform, each within each petal, elastic, the length of the calyx. Anthers twin, roundish.

PIST. Germs four or five, distant, oblong, woolly. Styles bristle-shaped. Stigmas simple.

PER. none. (Capsules five, woolly, ovate, acuminate at both ends, compressed, one-celled, not opening, G.)

SEEDS four or five, oblong, compressed, attenuated to both ends, interwoven with wool. (Solitary, Gärtn. who names capsules, what are here called seeds.)

OBS. The number varies in the parts of fructification, and is extricated with difficulty, on account of the wool in which they are involved.—The number of capsules varies from three to five. G.

ESSENTIAL CHARACTER.

Cal. four or five-leaved, longer than the corolla.

Petals eight or ten, spatulate. Peric. none. Seeds

five, connected by wool. (Caps. five, woolly. Seeds solitary, G.)

SPECIES.

1. Forskohlea tenacissima. Glammy Forskohlea.

Lin. syst. 437. Reich. 2. 405. mant. 72. suppl.

245. fasc. 1. t. 1. Jacqu. hort. 1. 18. t. 48.

Gärtn. fruct. 332. Ait. hort. kew. 2. 121.

F. latifolia. Retz. obs. 3. n. 51?

Caidbeja adhærens. Forsk. ægypt. 82.

Chamædrifolia tomentosa. Pluk. alm. t. 275. f. 6?

Hairy-hispid, leaves elliptic awnless, calycine segments oblong-lanceolate sharp.

2. Forskohlea candida. Rough Forskohlea.

Lin. syst. 437. suppl. 245. Ait. hort. kew. 2. 122.

F. scabra. Retz. obs. 3. n. 49.

Scabrous; leaves elliptic waved awnless, calycine segments ovate obtuse.

3. Forskohlea angustifolia. Narrow-leaved Forskohlea.

Lin. syst. 437. Retz. obs. 3. n. 50. Murr. in

comm. gott. 1784. p. 24. t. 2.

Strigose; leaves lanceolate, the teeth thorny-bristle-shaped; calycine segments lanceolate-subulate.

DESCRIPTIONS, &c.

1. Root annual. Stem two feet high, panicled, round, hispid, red; with alternate branches. Leaves alternate, petioled, ovate, marked with lines, and five or six serratures about the edge, hispid, and the hairs of the upper surface hooked. Petioles round, shorter than the leaves. Flowers axillary, in pairs, sessile, rough-hairy, deciduous with the fruit, when that is ripe^a.

According to Jacquin, the stem is a foot or a foot and half high, partly red, partly pale green with blood-red dots, hispid with white hairs and upright. Leaves entire at the base, loosely serrate, sharp, very pale green, ciliate with short hairs, hooked at the end, whence they adhere to any thing. Petioles round and hispid. Bractes lanceolate, acuminate, hirsute. Calyx commonly five-leaved; leaflets flat, unequal, extremely hirsute. Corolla compressed, petals usually eight. The whole style extremely hirsute.

^a Linn.

Native of Egypt. Introduced in 1770, by Morf. Richard. It flowers in July and August.

2. Stem shrubbyish, smooth, resembling that of the foregoing, whitish and woody at the base. Leaves oval, petioled, alternate, with three or four angles or teeth on each side, much smaller than in the foregoing species, white-tomentose underneath, adhering by the roughness on the upper surface, as in *F. tenacissima*. Flowers axillary, sessile, smaller than in the first species: petals white. Segments of the calyx whitish, and resembling a corolla^b.

Native of the Cape of Good Hope. Introduced in 1774. It flowers in June and July. Perennial^c.

3. Annual. Adhering like the others. Stem red. Leaves with four and sometimes only three small teeth on each side, ending in a small spine; not white underneath, but adhering by little spines on the nerves. Pistils three^d.

Native of the island of Teneriffe. Introduced in 1779. It flowers in July and August^e.

FORSTERA. (Named in memory of John Reinhold Forster, the father, and George Forster, the son, who in a voyage round the world collected and described many new genera and species of plants.)

Lin. suppl. 59. Gen. Schreb. 1379. Juss. 423.

Class. 20. 1. Gynandria Diandria.

GENERIC CHARACTER.

CAL. Perianth double: outer inferior, three-leaved, lateral; leaflets oblong, sharp: inner superior, six-cleft; leaflets erect, oblong, concave.

COR. one-petalled, tubulous-bell-shaped: tube length of the calyx: border six-parted; divisions oblong, obtuse, patulous, reflex at the tip, equal.

Nectary two small scales, obovate, petal-form, fixed to the style on both sides under the stigma.

STAM. Filaments two, very short, each fixed to the style between the stigma and a scale of the nectary under the stigma.

PIST. Germ inferior oval. Style cylindric, erect, the length of the tube of the corolla. Stigmas two, broad, spreading, somewhat bearded.

PER. Capsule oval, one-celled.

SEEDS numerous, shaped like saw-dust, fixed to a columnar receptacle.

ESSENTIAL CHARACTER.

Perianth double: outer inferior, three-leaved; inner superior, six-cleft. Cor. tubular.

SPECIES.

1. Forstera fedifolia.

Lin. syst. 819. suppl. 407. Forst. act. nov. upf. 3.

p. 184. t. 9. Fl. austr. n. 324.

DESCRIPTION, &c.

Stem herbaceous, prostrate, ascending, a hand in height, somewhat branched. Leaves imbricate, sessile, obovate, sharpish, quite entire, smooth, pressed to the stem, from spreading reflex at the tip, without veins, small. Peduncles solitary, one-flowered, terminating, erect, red, long. Flowers white, except at the throat and inside of the calyx, where they are red.

According to Forster (in Act. upf.), the stem is flexuose, jointed, slender, brown. Leaves acute, fleshy. Peduncles filiform, very long, very seldom two-flowered.

Native of New Zealand, on the tops of the highest mountains^f.

Gärtner has a plant which was given him by Forster under the name of *Forstera glabra*, and which he calls *Alibecia glabra*. He describes the calyx as five-parted and superior, with linear-lanceolate permanent leaflets. The fruit an inferior berry, ovate, fleshy, becoming finally coriaceous and wrinkled, crowned with the calycine leaflets, and within them with a flat area, having a little teat in the middle, and one-celled. Seed single, large, of an oblong spheroidal form, marked with a depressed longitudinal line, resembling a spurious future, produced at the

^b Linn. suppl. and Retz.

^c Hort. kew.

^d Retz, and Murr.

^e Hort. kew.

^f Linn. suppl.

base into a conical crooked beak, of a reddish bay-colour, smooth and very hard. The situation of the embryo is singular and very unusual, for it is not only excentric, or placed without the axis, but one edge of the cotyledons or lobes faces the back, and the other the belly of the seed.

FORSYTHIA. See *Decumaria*.

FOTHERGILLA. (In memory of John Fothergill, M. D. an eminent physician, and patron of Botany; who cultivated a variety of the most curious plants in his garden near London.)

Lin. gen. Reich. n. 734. Schreb. 922. suppl. 42. Juss. 408.

Class. 13. 2. Polyandria Digynia.

Nat. order of *Amentaceæ*, Jussieu.

GENERIC CHARACTER.

CAL. Perianth one-leafed, bell-shaped, close, truncate, short, permanent.

COR. none.

STAM. Filaments very many, filiform, thicker at top, long. Anthers minute, erect, quadrangular.

PIST. Germ ovate, bifid. Styles two, subulate, terminating, the length of the stamens.

PER. Capsule hardened, two-lobed, two-celled; lobes two-valved.

SEEDS solitary, bony.

ESSENTIAL CHARACTER.

Cal. Ament ovate; scales one-flowered. Cor. calyx-form, one-petalled, five-cleft.

SPECIES.

1. *Fothergilla alnifolia*.

Lin. syst. 502. suppl. 267. Ait. hort. kew. 2. 241.

α. *F. obtusa*. Broad-leaved *Fothergilla*.

Mill. ic. t. 1.

β. *F. acuta*. Narrow-leaved *Fothergilla*.

F. Gardeni. Jacqu. collect. 1. 97.

DESCRIPTION, &c.

A tree, having the appearance and leaves of Alder. Leaves alternate, petioled, wedge-shaped, entire, serrate at the tip, serratures very large and few, the upper surface green, the lower hoary, the younger ones white with nap underneath. Flowers in a close spike at the end of the stem, like an oblong head, and white. Capsules large, ovate, very hirsute, sharp, two-celled: the valves opening into four points, until the seeds are ripe. The flowers come out in the beginning of spring from the buds at the end of the branches before the leaves. The flower is an ament. The fruit resembles that of *Hamamelis*, but the flower is very different.

Native of North America. Introduced in 1765, by Mr. John Bush. It flowers from april to june.

β. Jacquin describes this as a branching shrub, with ferruginous round branches. Leaves oblong, obscurely crenate at top, on short petioles, alternate, smooth. Spike at the end of the branchlets, sessile, ovate, close. Flowers sweet-smelling, honied, sessile. The one-leafed perianth is an ovate, obtuse, concave, entire scale, with black hairy dots scattered over it, and ciliate with black hairs. Corolla none. Filaments about eighteen, white, filiform, thickish, almost upright, twice as long as the calyx. Anthers roundish, twin, yellow. Germ green, roundish, bifid. Styles two, awl-shaped, upright, the length of the stamens. Stigmas simple, sharp. Capsule two-celled. Seeds solitary.

Native of Carolina.

FOTHERGILLA, Aubl. See *Melastoma*.

FOX-GLOVE. See *Digitalis*.

FOX-GRAPE. See *Vitis vulpina*.

FOX-TAIL GRASS. See *Alopecurus*.]

FRAGARIA, (of Pliny. So named from the fragrancy of the fruit.)

Engl. Strawberry. Fr. Fraiser.

Lin. gen. n. 633. Reich. n. 689. Schreb. n. 865.

Tournef. 152. Gært. 73. Juss. 338.

Class. 12. 5. Icosandria Polygynia.

Nat. order of *Senticosæ*. *Rosaceæ*, Juss.

* Linn. suppl. and syst.

* Hort. kew.

GENERIC CHARACTER.

CAL. Perianth one-leafed, flat, ten-cleft; divisions alternately exterior and narrower.

COR. Petals five, roundish, spreading, inserted into the calyx.

STAM. Filaments twenty, subulate, shorter than the corolla, inserted into the calyx. Anthers lunular.

PIST. Germs numerous, very small, collected into a head. Styles simple, inserted at the side of the germ. Stigmas simple.

PER. none. Common Receptacle of the seeds (vulgarly called a berry) ovate, pulpy, soft, large, coloured, truncate at the base, and deciduous.

SEEDS numerous, very small, acuminate, scattered over the surface of the receptacle: (a little compressed, smooth, glittering, G.)

ESSENTIAL CHARACTER.

Cal. ten-cleft. Pet. five. Recept. of the seeds ovate, and like a berry.

SPECIES.

1. *Fragaria vesca*. Esculent Strawberry.

Lin. spec. 708. Reich. 2. 537. hort. cliff. 192. upf. 133. fl. suec. n. 450. Gært. fruct. 350. Hudf. angl. 221. With. 529. Relb. cant. n. 371. Lightf. scot. 267. Hall. belv. n. 1112. Neck. gallob. 223. Pollich pal. n. 491. Leers herb. n. 391. Blackw. t. 77. Dubam. t. 1. Berg. phyt. 267. Krock. fles. n. 789. Allion. pedem. n. 1491. Lour. cochinch. 325. Villars dauph. 3. 560.

Potentilla vesca. Scop. carn. n. 625. Ger. prov. 470. n. 12.

α. *Fragaria*. Dod. pempt. 672. 2. Ger. 844. 1. emac. 997. 1. Raii hist. 609. syn. 254. Petiv. brit. t. 40. f. 7.

F. vulgaris. Baub. pin. 326. Lin. lapp. 209.

F. vesca. Mill. dict. n. 1. Common Wood Strawberry.

F. sylvestris. Mor. hist. f. 2. t. 19. f. 2. Ait. hort. kew. 2. 211.

F. ferens fraga alba & rubra. Baub. hist. 2. 394. 3.

F. fructu albo. Baub. pin. 326. Ger. 844. 2. emac. 997. 2. Dubam. n. 2. White Wood Strawberry.

F. fructu viridi. Dubam. n. 17. t. 9. Green or Pine-apple Strawberry.

F. alpina. Dubam. n. 7. t. 2. Alpine Strawberry.

F. rubra. Schwenckf. 1. p. 74. Krock. fles. 2. 158.

F. fructu hispido. Ger. emac. 998. Raii hist. 609. 2. syn. 254. 2.—*F. aculeata*. Park. parad. 527. f. 8. Rough-fruited Strawberry.

β. *F. fructu parvi pruni magnitudine*. Baub. pin. 327.

F. muricata. Mill. dict. n. 3.

F. vesca pratensis. Ait. hort. kew. 2. 211.

F. hortensis major. Mor. hist. f. 2. t. 19. f. 1?

F. bohemica maxima. Park. parad. 527. f. 7. Raii hist. 609. 3.

Le Capiton. Duchesne frais. 145. Dubam. n. 14. 15. 16. t. 8.

Hautboy Strawberry.

γ. *F. chiloensis*. Mill. dict. n. 4. Ait. hort. kew. 211. Dill. elth. 145. t. 120. f. 146.

Le Frutiller. Duch. fr. 165. Dubam. n. 9. t. 3. Chili Strawberry.

δ. *F. virginiana*. Mill. dict. n. 2. Ait. hort. kew. 211. Park. parad. 528. Raii hist. 609.

Le Fraiser ecarlate. Duch. fr. 204. Dubam. n. 11. t. 5.

Scarlet or Virginian Strawberry.

ε. *F. Ananas*. Mill. fig. 192. t. 288. Ait. hort. kew. 212.

Le Fraiser Ananas. Duch. fr. 190. Dubam. n. 12. t. 6.

Pine Strawberry.

[ζ. *F. caroliniana*.

Le Fraiser de Caroline. Dubam. n. 13. t. 7.

Carolina Strawberry.

Creeping by runners.

2. *Fragaria monophylla*. Simple-leaved Strawberry.

Lin. syst. 476. Reich. 538. Curtis magaz. t. 63. Ait. hort. kew. 2. 212.

Le Fraiser de Versailles. *Duchefne fraif.* 124.

Dubam. n. 5.

Leaves simple.

3. *Fragaria sterilis.* *Barren Strawberry.*

Lin. spec. 709. *syf.* 476. *Reich.* 538. *Huds.*

angl. 222. *With.* 530. *Curtis lond.* 3. 30.

Relb. cant. n. 372. *Lightf. scot.* 268. *Hall.*

helv. n. 1113. *Neck. gallob.* 223. *Pollich. pal.*

n. 492. *Krock. filef. n.* 790. *Baub. pin.* 327.

Lob. ic. i. 698. *Ger. emac.* 998. *Petiv. brit.*

t. 40. *f.* 8. *Mor. hist. f. 2. t.* 19. *f.* 5. *Vaill.*

par. t. 4. *f.* 1. *Raii hist.* 611. *syn.* 254.

F. minime vesca. *Park. theat.* 758. *Baub. hist.* 2.

395.

Potentilla fragarioides. *Villars dauph.* 3. 561.

Stem decumbent, flowering branches lax.

DESCRIPTIONS, &c.

1. This species is sufficiently distinguished by the long slender runners, which it throws out from the root, and by means of which it increases abundantly—by its ternate leaves—and its remarkable fleshy receptacle commonly called a berry, but having the outer surface studded with the seeds. From the first and last of these characters it obtained the English name of *Strawberry*: for it is a plant whose running stems are strewed (anciently *strawed*) over the ground, and whose fruit is usually regarded as a berry.

In German it is *Erdbeere*; in Danish *Jordbær*: (these convey the same idea with the English name,) “*humī nascentia fraga*.” in Swedish *Smultron*, in Smoland *Jordbar* (Earth-berry), in Dalekarlia *Jolebar*, in Gothland *Rodbar*; in French *le Fraiser, la Fraise*; in Italian *Fragaria, Fragola, Fravola*; in Spanish *Fresera, Fresa*; in Portuguese *Morangueiro, Fragaria, Morango*; in Russian *Semljaniza*.

I have recited the most remarkable varieties; but since the cultivation of this delicate and salutary fruit has become so extensive, and different parts of the world have furnished several remarkable ones, varieties are daily increasing, and certainly may be multiplied by the mixture of the farina, and sowing the seeds.

It is observed by Mons. Duhamel, that in our European Strawberries there are generally four stamens to each petal, but in those of America five or six: so that when the flowers of the latter have the regular number of petals, they have from twenty-five to thirty stamens; but when they have seven petals, the number of stamens is from thirty-five to forty-two. In the European Strawberries when any supernumerary petals are placed in a row before the regular ones, each diminishes the number of stamens by one or two; but when they are placed behind the regular petals, the number of stamens is not diminished.

α. The common Wood Strawberry of Europe has the leaflets oval-lanceolate, acutely serrate; the petioles woolly; the runners slender, smooth, often tinged with purple: peduncles with two or more flowers. The fruit small, and usually red; with us it has commonly little flavour, because the plants are too much shaded in woods and hedges; the mountainous Strawberries of warmer and drier countries, though they usually grow among bushes, yet enjoying more sun, and a drier air and soil, are much higher flavoured and larger than ours. The subordinate varieties of this are] 1. The White Wood Strawberry, which ripens a little later in the season, and is by many persons preferred to it for its quick flavour, but as it seldom produces so large crops of fruit as the red sort, it is not very generally cultivated.

[The Alpine Strawberry is a larger plant than that which grows in our woods, the stem higher, the leaves broader, the fruit larger, red and usually much pointed, sometimes white. It is well flavoured, and the plants being great bearers from June till the autumn frosts put a stop to them, the Alpine Strawberry is very valuable. The reason of its long continuance in fruit is, that the runners which it

throws out during the summer shoot up into flower and fruit the same year, more freely than the others. Mr. Miller, who makes this a variety of the Scarlet Strawberry, says that the Dutch gardeners entitle it *Everlasting Strawberry*.

The rough-fruited or prickly Strawberry is nothing but a mere accidental variety. The flower is greenish; the fruit harsh, rough and prickly, of a greenish colour with some show of redness. John Tradescant the elder first took notice of it in a woman's garden at Plymouth: her daughter had gathered it in the country and set the roots there.—Merret afterwards observed it in Hyde Park and Hampstead wood.]

β. The Hautboy Strawberry has been long cultivated in the English gardens, and is very different from the rest in leaf, flower and fruit. There is an improved variety of it, commonly called the Globe Hautboy; the fruit of which is larger, and of a globular form. Where these are neglected, they degenerate to the common Hautboy; but where the soil is good, and the culture well managed, the plants will produce a great quantity of large well-flavoured fruit.

[The Hautboy is very apt to degenerate, and to produce only dry effete fruit. This, according to Mons. Duhamel, is owing to there being two sorts of plants, one bearing male, the other female or rather imperfect hermaphrodite flowers; for they have thick, short filaments, with very small effete anthers. The former of these, being reputed useless, are carefully destroyed, and hence not only the seeds become abortive, but the receptacle, which we commonly call the fruit, small and juiceless. This may be remedied, either by planting a few of the male plants, or of the scarlet or pine Strawberry among the Hautboys. M. du Chesne, who has writ a treatise in French on the subject of Strawberries, having sowed the seeds of Hautboys, had about an equal number of male and female plants.—Retzius also informs us, that some of the plants produce male flowers, and are constantly barren, others hermaphrodite and always fertile.

[The Bohemia Strawberry of Parkinson seems to be the Hautboy; but he mentions nothing of the high musky flavour peculiar to it; and by Ray's account it should seem to be what we now call the Alpine Strawberry; for he says it differs in nothing from the Wood Strawberry, but in being nearly double the size in all its parts, and that the fruit is not so pleasant, but sweeter. Parkinson's relation however is very different: “that it is the goodliest “and greatest, both for leaf next to the Virginian, “and for beauty far surpassing all, for some of the “berries have been measured to be near five inches “about.”

I know not upon what authority Mr. Miller asserts that the Hautboy came originally from America.]

γ. The Chili Strawberry was brought to Europe by Mons. Frezier, an engineer, who was sent to America by the King of France; it was first planted in the Royal Garden at Paris, whence it was communicated to several curious persons in Holland, and in the year 1727, Mr. Miller brought a parcel of the plants to England, which were communicated to him by Mr. George Clifford, of Amsterdam, who had large beds of this sort growing in his curious gardens at Hartecamp. The leaves are hairy, oval, and of a much thicker substance than any sort yet known, and stand upon very strong hairy foot-stalks; the runners from the plants are very large, hairy, and extend to a great length, putting out plants at several distances. The peduncles are very strong; the leaves of the calyx are long and hairy. The flowers are large, and are often deformed; and so is the fruit, which is very large, and when cultivated in very strong land, the plants produce plenty of fruit, which is firm, and very well flavoured; but as it is a bad bearer in most places where it has been cultivated, it has generally been neglected.

* *Ger. emac.*

[In

[In the Chili Strawberry, says Monf. Duhamel, the flowers which we have in Europe are imperfect hermaphrodites, the anthers being small and without pollen; no seed therefore is produced unless the pistils be impregnated by the pollen of some other, which has perfect flowers: and this has actually been done.]

Frezier's account of the fruit is that it usually attains the size of a walnut; but is sometimes as large as an-egg, that it is of a paler red than the European Strawberry, and not so quick in its flavour. The flowers consist of more than five or six petals, these are not heart-shaped, but variously inflected and sinuous, they are white but with a slight tinge of yellow at the claws; filaments short and broadish, anthers from a broad base cusped at the end, at first pale but afterwards brown; styles yellowish, with a curled stigma when viewed through a glass granulous. The flowers have something of the smell of the Hawthorn. The calyx, peduncles, flowering stems, and petioles are very hairy. The leaves on their upper surface are dark green and hairy, on their lower whitish and lanuginous; the serratures about the edge are broad and large.]

δ. The Scarlet Strawberry is the sort which is first ripe, for which reason it merits esteem, had it nothing else to recommend it; but the fruit is so good, as by many persons of good taste to be preferred to most others. This was brought from Virginia, where it grows naturally in the woods. It is very different from the Wood Strawberry in leaf, flower and fruit.

[The leaves are dark green and of a more even surface than the others; the flowering stems are shorter, and the fruit is frequently concealed among the leaves. Parkinson observes, that scarce one fruit can be seen ripe among a number of plants, so that probably in his time the culture was not understood.]

ε. The Pine Strawberry has lately been introduced into the English gardens. Some affirm that it was brought from Louisiana, others from Virginia; but Mr. Miller received some plants of it from a curious gentleman of Amsterdam, who assured him they were brought from Surinam. The leaves have a great resemblance to those of the Scarlet Strawberry; but are larger, of a thicker substance, and the indentures of their edges are blunter: the runners are much larger and hairy: the peduncles are stronger, the flowers much larger, and the fruit approaches in size, shape and colour to the Chili Strawberry. As this produces a great quantity of fruit, when the plants are kept clear from runners, and the fruit is very large, it is worthy of cultivation^b.

The Pine Strawberry, according to Monf. Duhamel is raised from the seed of the Chili Strawberry. The flower is very large, and the fruit has something of the smell and taste of the Pine-apple. It varies in the form; some being ovoid, others oblate spheroid, others again irregular; they are much smaller than the Chili Strawberry. They are smooth and shining; the shaded side yellowish white, with a tincture of red, and the seeds red; the side towards the sun pale red composed of a mixture of red-brown and yellow; the seeds red-brown. The flesh is less firm than that of the Chili Strawberry, but it is juicy and has a pleasant perfumed taste.

ζ. The Carolina Strawberry greatly resembles the foregoing, but it is much less in all its parts; and less hairy; the flower-stems are shorter; the flower-buds more lengthened out, and less swollen; the divisions of the calyx larger, and the little ones seldom divided; the petals rather smaller and seldom more than five in number; the fruit smaller, more regular in the form, of a higher colour, and the perfume not so pleasant. The Pine varies little when raised from seed, whereas this varies much in the flower, fruits, &c.^c

The Wood Strawberry has been cultivated time immemorial. With us, we can go back at least to

the time of Richard III. when the Bishop of Ely cultivated this fruit in the garden of his palace in Holborn, as related in Stow's annals. The passage, having been minutely copied by Shakspeare, is well known.

Thomas Hyll (1593) informs us, that the berries be much eaten at all men's tables in the summer, with wine and sugar; and that they will grow in gardens unto the bigness of a mulberry^d.

The other varieties were long before they came into cultivation. Gerarde (1597) makes mention of none but the common Wood Strawberry, with its subordinate varieties, the white and the green, which he says are rare. To these Parkinson (1629) adds the Virginia, which we now call the Scarlet Strawberry; and the Bohemia, of which he gives the following account—"it hath been with us but of late days. Master Quester the Postmaster first brought them over into our country; but I know no man so industrious in the careful planting and bringing them to perfection in that plentiful manner, as Master Vincent Sion, on the Bank side, near Paris garden stairs, who from seven roots, in one year and a half, planted half an acre of ground with the increase from them, besides those he gave away to his friends."

After this, no addition seems to have been made to our stock, until 1727, when Mr. Miller imported the Chili Strawberry which Frezier had brought to Marseilles about 1712. It flowered in the Eltham garden in the year 1730, but it had not then produced ripe fruit. In 1720, Bradley says we have only three sorts of Strawberries, the Scarlet, the Hautboy or great White Strawberry, and the Wood Strawberry.—Mortimer has the Red Wood, White Wood, Long Red, Polonian, and Green Strawberry; he speaks of the Scarlet as having been lately introduced from New England.

The berries, either eaten alone, or with sugar, or with milk, are universally esteemed a most delicious fruit: they are grateful, cooling, subacid, juicy, and have a delightful smell. Taken even in large quantities they seldom disagree with the stomach. They promote perspiration, impart a violet scent to the urine, and dissolve the tartarous incrustations upon the teeth. Persons afflicted with the gout or stone have found great relief by using them profusely. Linneus informs us, that by eating plentifully of them every day, he kept himself almost free from the gout. Hoffman affirms, that he has known consumptive people cured by them. The bark of the root is astringent, like the Tormentil, and the rest of its congeners^e.

Monf. Duchesne published a treatise on the Strawberry at Paris in 1766.

2. The scape or flowering-stem of this is longer than it usually is in the common Wood Strawberry, the petals are smaller, and the calyxes are gashed^f. This however is frequently the case with the common wild sort in woods^g; and the others are very inconsiderable differences, especially in a genus so liable to variation as this. Other petty distinctions, such as that the leaves are smaller in winter, and their ribs less branched; the runners more slender and productive, the fruit more oblong or pyramidal^h; will not persuade us to separate this from the foregoing as a species. Even the remarkable difference of simplicity in the leaves, cannot make us regard it as any thing more than a singular variety; for plants raised from the runners will sometimes have ternate leaves, and seedling plants will also sometimes have them. It was originally raised at Versailles by M. Duchesne in the year 1761, from seeds of the Wood Strawberryⁱ.—It agrees with its parent in the time of flowering and fruiting; nor does the form, size or flavour of the fruit differ more from that than might be expected from culture.

3. The name of *sterilis* or *barren* is not given to this species, because it does not produce perfect seed,

^b Miller's figures.

^c Duhamel.

^d Profitable Arte of Gardening, p. 107.

^e Wither, arr. Linn. succ. Lightf.

^f Linn. syst.

^g Reich.

^h Curtis.

ⁱ Ibid.

for it certainly does, but because the receptacle is not fleshy and eatable. To distinguish this from the esculent Strawberry with all its varieties, it is sufficient to observe, that though the branches be trailing, yet they never creep or throw out roots; that the leaves are ovate or obovate, bluntly ferrate, silky, and silvery-white underneath, with very hairy petioles; that the flower-stems are small, weak and hairy, sustaining one or at most two flowers, smaller and with whiter petals than the foregoing. The whole plant is smaller, weaker and more hairy: the petioles and leaflets extremely hairy; the latter on the flowering plants very small, about half an inch in length, on the young plants twice as long. Stem covered with brown scales. Peduncles from an inch to an inch and half long, terminated by one flower, and having a single leaf in the middle of it, from the axil of which springs another flower. Peduncles and calyxes tinged with red. Corolla three-eighths of an inch in diameter: petals roundish, frequently emarginate.

This species is very distinct from the other; and according to the observation of Curtis, Leers, &c. its fructification has a greater affinity with *Potentilla*, between which genus and *Fragaria* this species seems to be the link.—It flowers earlier than the other, namely in march, and is common in woods and hedges, and on some heaths; in Switzerland and in Germany as well as Britain. Also in Japan.]

PROPAGATION AND CULTURE.

Strawberries in general love a gentle hazelly loam, in which they will thrive and bear greater plenty of fruit than in a light rich soil. The ground should also be moist, for if it is very dry, all the watering which is given to the plants in warm dry seasons, will not be sufficient to procure plenty of fruit; nor should the ground be much dunged, for that will cause the plants to run into suckers, and grow luxuriant, and render them less fruitful.

The best time to remove these plants is in october, that they may get new roots before the hard frost sets in, which loosens the ground; so that if the roots of the plants are not pretty well established in the ground, the plants are frequently turned out of the ground by the first thaw; therefore the sooner they are planted when the autumnal rains begin, the less danger will there be of their miscarrying; and sometimes those which are well rooted, will produce a few fruit the first year; there are some who transplant them in the spring; but where that is done, they must be duly supplied with water in the dry weather.

The ground in which these are planted should be thoroughly cleaned from the roots of Couch, and all other bad weeds; for as the Strawberry plants are to remain three years before they are taken up, if any of the roots of those bad weeds are left in the ground, they will have time to multiply so greatly as to fill the ground, and overbear the Strawberry plants. The ground should also be well trenched and made level; then the usual method is to lay it out into beds of four feet broad, with paths two feet or two feet and a half broad between each; these paths are necessary for the convenience of gathering the fruit, and for weeding and dressing the beds, and also for watering the plants; after the beds are marked out, there should be four lines drawn in each, at a foot distance, which will leave six inches space on each side, between the outside rows and the paths; then the plants should be planted at about a foot distance from each other in the rows, in a quincunx order, being careful to close the ground to the roots of the plants when they are planted; and if there should not happen rain soon after, the plants should be well watered to settle the earth to their roots.

The distance here mentioned must be understood for the Wood Strawberries only, for as the other sorts grow much larger, their distances must be proportioned to their several growths; therefore the Scarlets and Hautboys should have but three rows of plants in each bed, which should be at fifteen

inches distance, and the plants in the rows should be allowed the same space from each other, and the Chili and other large Strawberries must have but two rows of plants in each bed, which should also be two feet apart in the rows; for as these grow very strong, if they have not room to spread, they will not be very fruitful.

In chusing proper plants depends the whole success; for if they are promiscuously taken from beds without care, great part of the plants will become barren; these are generally called blind, which is when there are plenty of flowers, but no fruit produced; if these flowers are well examined, they will be found to want the female organs of generation, most of them abounding with stamina, but there are few, if any styles; so that it frequently happens among these barren plants, that some of them have a part of an imperfect fruit formed, which will sometimes ripen; this barrenness is not peculiar to Strawberries, but is general to all those plants which have creeping roots, or stalks; and the more they increase from either, the sooner they become barren, and this in some degree runs through the vegetable kingdom; for trees and shrubs which are propagated by cuttings, are generally barren of seeds in two generations, that is, when they are propagated by cuttings, which were taken from plants raised by cuttings; this I have constantly found to hold in great numbers of plants, and in fruit-trees it often happens, that those sorts which have been long propagated by grafts and buds, have no kernels. But to return to the choice of the Strawberry plants; these should never be taken from old neglected beds, where the plants have been suffered to spread or run into a multitude of suckers, nor from any plants which are not very fruitful; and those offsets which stand nearest to the old plants, should always be preferred to those which are produced from the trailing stalks at a farther distance; and the Wood Strawberry is best when the plants are taken fresh from the woods, provided they are taken from fruitful plants, because they are not so liable to ramble and spread, as those which are taken from plants, which have been long cultivated in gardens.

When the plants have taken new root, the next care is if the winter proves severe, to lay some old tanners bark over the surface of the bed between the plants to keep out the frost: this care is absolutely necessary to the Chili Strawberry, which is frequently killed in hard winters, where it is exposed without any covering; therefore where tanners bark cannot easily be procured, saw-dust, or sea-coal ashes may be used; or in want of these, if decayed leaves of trees, or the branches of Evergreen-trees with their leaves upon them, are laid over the beds, to prevent the frost from penetrating deep into the ground, it will secure the plants from injury.

The following summer the plants should be constantly kept clean from weeds, and all the runners should be pulled off as fast as they are produced; if this is constantly practised, the plants will become very strong by the following autumn; whereas when this is neglected (as is too frequently seen) and all the runners permitted to stand during the summer season, and then pulled off in the autumn, the plants will not be half so strong as those where that care has been taken; and there will not be near the same quantity of fruit upon them the following spring, nor will the fruit be near so large and fair; but where proper care is taken of the plants the first summer, there is generally a plentiful crop of fruit the second spring.

As this fruit is very common, there are but few persons who cultivate it with proper care; therefore I shall give some directions for the doing it; which, if carefully practised, will be attended with success.

The old plants of Strawberries are those which produce the fruit, for the suckers seldom produce any till they have grown a full year; therefore it appears how necessary it is to divest the old plants

of them; for wherever they are suffered to remain, they rob the fruitful plants of their nourishment in proportion to their number; for each of these suckers sends out a quantity of roots, which interfere, and are so closely matted together, as to draw away the greatest part of the nourishment from the old roots, whereby they are greatly weakened; these suckers also render each other very weak, and hence is the cause of barrenness; for I have known where the old plants have been constantly kept clear from suckers, they have continued very fruitful four or five years without being transplanted; however, it is the best way to have a succession of beds, that after three years standing they may be taken up; because by that time they will have exhausted the ground; and it is always observed, that Strawberries planted on fresh land are the most fruitful.

The next thing to be observed, is in autumn to divest the plants of strings, or runners, and all the decayed leaves, and clear the beds from weeds; then the paths should be dug up, and the weeds buried, and some earth laid over the surface of the beds between the plants; this will strengthen the plants, and prepare them for the following spring; and if after this, there is some old tanners bark laid over the surface of the ground between the plants, it will be of great service to them. In the spring, after the danger of hard frost is over, the ground between the plants in the beds should be forked with a narrow three-pronged fork, to loosen it, and break the clods; and in this operation, the tan which was laid over the surface of the ground in autumn will be buried, which will be a good dressing to the Strawberries, especially in strong land; then about the end of march, or the beginning of april, if the surface of the beds is covered with moss, it will keep the ground moist, and prevent the drying winds from penetrating the ground, and thereby secure a good crop of fruit; and the moss will preserve the fruit clean, that when heavy rains fall after the fruit is full grown, there will be no dirt washed over them, which frequently happens, so that the fruit must be washed before it is fit for the table, which greatly diminishes its flavour.

The soil in which the Chili Strawberry is found to succeed best, is a very strong brick earth, approaching near to clay; in this soil I have seen them produce a tolerable good crop, and the fruit has been extremely well flavoured; and if some care be taken to pull off the runners as they are produced, so as to leave only the old plants, I make no doubt but these plants may be as fruitful as the common Hautboy: this I mention from one or two experiments, which have been made by my direction, and not from theory.

There are some persons who are so fond of Strawberries, as to be at any expense to obtain them early in the year, and should I omit to give some directions for this, they would suppose the book very defective; therefore I shall mention the practice of some, who have succeeded best in the management of these fruits.

Where there are any hot walls erected in gardens for the producing early fruit, it is very common to see Strawberries planted in the borders, that the fire which is applied for ripening the fruit against the walls, may also serve the purpose of bringing forward the Strawberries; but where this is practised, the Strawberry plants should be annually renewed; taking up the plants as soon as their fruit is over, and all the earth of the borders should be taken out, at least two feet deep, and fresh earth brought in, which will be equally good for the wall trees; but, as was before observed, that the old plants of Strawberries only are those which produce the fruit, there should be a sufficient number of plants brought up in pots, to supply the border annually; and the same must be done if they are to be raised in a common hot-bed, or in stoves; therefore I shall begin with giving directions for raising and preparing plants for those purposes.

The sorts which are the most proper for forcing

early, are the Scarlet, the Alpine, and the Wood Strawberries, for the Hautboy grows too large for this purpose. In the choice of the plants, there should be an especial care taken to have them from the most fruitful plants, and those which grow immediately to the old plants; they should be taken off in autumn, and each planted in a separate small pot filled with loamy soil, and placed in a shady situation till they have taken root; after which they may be removed to an open situation, where they may remain till the middle or end of november, when the pots should be plunged into the ground up to their rims, to prevent the frost from penetrating through the side of the pots; if these are placed near a wall, pale, or hedge, exposed to an east aspect, or north-east, they will succeed better than in a warm situation, because they will not be forced too forward; the only care they require, is to secure them from being turned out of the pots after frost. The spring following the plants will be so far advanced as to have filled the pots with their roots by the end of april, when they should be turned out of the pots, and their roots pared; then planted into penny pots filled with the like loamy soil, and plunged into the ground in a shady situation, where they should remain the following summer; during which time they must be duly kept clean from weeds, and all the runners must be taken off as fast as they are produced; likewise if there should be any flowers come out, they should be pinched off, and not suffered to bear fruit, which would weaken the plants, for there cannot be too much care taken to have the plants as strong as possible, that they may produce plenty of fruit, without which they are not worth the trouble of forcing.

About the middle of october, or earlier, if the autumn proves cold, the pots should be removed into a warmer situation, to prepare them for forcing; for they should not be suddenly removed from a very cold situation immediately into the stove or hot-bed, but be gradually prepared for it; but where they are designed for the borders near a hot wall, they may then be turned out of the pots, and planted into the borders, that they may have time to get fresh rooting, before the fires are made to heat the walls; when these are planted, they may be placed very close to each other; for as they are designed to remain there no longer than till they have ripened their fruit, they will not require much room, as their roots will find sufficient nourishment below, and also from the earth which is filled into the spaces between the balls of earth, about their roots; and it is of consequence to get as much fruit as possible in a small space, where there is an expense to force them early. If the fires are lighted about Christmas, the Strawberries in these borders will be ripe the end of march; or if the season should prove very cold, it may be the middle of april before they will be fit for the table.

In the management of the plants there must be care taken to supply them with water when they begin to shew their flowers, otherwise they will fall off without producing any fruit; and, in mild weather, there should be fresh air admitted to them every day; but as fruit-trees against the wall must be so treated, the same management will agree with the Strawberries.

If the Strawberries are intended to be forced in a stove, where there are Pine-apples, and no room to plunge them in the tan-bed, then the plants should be transplanted into larger pots in september, that they may be well rooted before they are removed into the stove, which should not be till december; but if they are placed under a frame the beginning of november, where they may be screened from the frost, it will prepare the plants better for forcing; and those who are desirous to have them very early, make a hot-bed under frames, upon which they place their plants the latter end of october, which will bring them forward to flower, and then they remove the plants into the stove; when these plants are removed into the stove, they should be placed as

near to the glasses as possible, that they may enjoy the full sun and air; for when they are placed backward, the plants will draw up weak, and the flowers will drop without producing fruit. As the earth in the pots will dry pretty fast when they stand upon the pavement of the hot-house, or on shelves, the plants must be duly watered; but it must be done with discretion, and not too much given, which will be equally hurtful to them; if these plants are properly managed, they will produce ripe fruit in february, which is as early as most people will chuse to eat them.

When the fruit is all gathered from the plants, they should be turned out of the stove; nor should those plants which are in the borders near the hot walls be left there after their fruit is gathered, but immediately taken up, that they may rob the fruit-trees of their nourishment as little as possible.

Where there is no conveniency of stoves, or hot-walls for this purpose, the fruit may be ripened upon common hot-beds; and though they may not be quite so early as with the other advantages, yet I have seen great crops of the fruit ripe in april, which were upon common hot-beds under frames, and executed at a small expence in the following manner.

The plants were prepared in pots after the manner before directed, and were placed in a warm situation the beginning of october; about Christmas the hot-bed was made in the same manner as for Cucumbers, but not so strong; and as soon as the first violent steam of the dung was over, some old rotten dung laid over the hot-bed to keep down the heat, or where it can be easily procured, neats dung is preferable for this purpose; then the plants should be turned out of the pots, and placed upon the bed as close together as possible, filling up the interstices between the plants with earth, afterwards the plants must have air admitted to them every day; and if the heat of the bed is too great, the plants should be raised up, to prevent their roots being scorched; and if the bed is too cold, the sides of it should be lined with some hot dung: this first bed will bring the plants to flower by the end of february, or the beginning of march, by which time the heat of the bed will be spent, therefore another hot-bed should be prepared to receive the plants, which need not be so strong as the first; but upon the hot dung should be laid some neats dung about two inches thick, which should be equally spread and smoothed; this will prevent the heat of the bed from injuring the roots of the plants, upon this should be laid two inches of a loamy soil; when this has laid two days to warm, the plants should be taken out of the first hot-bed, and turned carefully out of the pots, preserving all the earth to their roots, and placed close together upon this new hot-bed, filling up the vacancies between the balls with loamy earth: the roots of the plants will soon strike out into this fresh earth, which will strengthen their flowers, and cause their fruit to set in plenty; and if proper care is taken to admit fresh air to the plants, and supply them properly with water, they will have plenty of ripe fruit in april, which will be full two months before their natural season.

The Alpine Strawberry will supply the table the whole summer, especially if care be taken in dry seasons to water the plants, without which the blossoms are apt to fall off, without producing fruit.

[Thus may a succession of this delicious and salubrious fruit be obtained from march or april, and even earlier, by means of a hot-house, forcing-frame, hot-walls or hot-beds, and in the open air from june to october and november, should the weather prove mild; for not only the Alpine but the White Wood Strawberry will continue bearing in tolerable abundance until the autumn frosts come on with some degree of severity, especially if the situation be warm, and the soil in which they grow not too light.]

There are some persons so curious as to raise the plants from seeds, by which they have greatly im-

proved some of the sorts; and if this was more practised, I am certain it would be found of singular service, where the fairest of the fruit of each kind are chosen. The seeds should be immediately sown when the fruit is eaten; the best way is to sow the seed in pots, placing them in the shade.

In the spring of the year 1724, there was scarcely any rain from february till about the middle of july, so that most of the Strawberries were burnt up; but a copious rain falling in july, they recovered and put out abundance of flowers, which were succeeded by fruit that ripened in september, when the London markets were supplied with a great plenty.

[FRAGARIA. See *Comarum*, *Potentilla*, *Sibbaldia*, *Tormentilla*.

FRAGARIÆ AFFINIS. See *Sibbaldia*.

FRAGARIUS. See *Melastoma*.

FRANCA. See *Frankenia*.

FRANGULA. See *Cassine*, and *Rhamnus*.

FRANKENIA. (So named in honour of John Frankenius, Professor of Botany at Upsala, who first enumerated the plants of Sweden in *Speculum Botanicum* 1638 and *Speculum Botanicum renovatum*. 1659 qu.)

Lin. gen. n. 445. Reich. n. 481. Schreb. n. 604.

Juss. 303. Franca. Mich. 22.

Class. 6: 1. Hexandria Monogynia.

Nat. order of *Calycanthemæ*—*Caryophylleæ*, Juss.

Personatæ, With.?

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, subcylindric, ten-cornered, permanent: *mouth* five-toothed, sharp, patulous.

COR. *Petals* five; claws the length of the calyx; border flat, with roundish, spreading laminae.

Nectary with a channelled, acuminate claw, inserted into each claw of the petals.

STAM. *Filaments* six, length of the calyx. *Anthers* roundish, twin.

PIST. *Germ* oblong, superior. *Style* simple, length of the stamens. *Stigmas* three, oblong, erect, obtuse.

PER. *Capsule* oval, one-celled, three-valved.

SEEDS very many, ovate, very small.

OBS. *Stamens* five to ten. *Fruit* three-celled. Adans.

Qu. whether the style be really simple? Juss.

ESSENTIAL CHARACTER.

Cal. five-cleft, funnel-form. *Petals* five. *Stigma* six-parted. *Caps.* one-celled, three-valved.

SPECIES.

1. *Frankenia lævis*. Smooth *Frankenia* or *Sea Heath*.

Lin. spec. 473. Reich. 2. 111. Hudf. angl. 137.

With. 367. Relb. n. 259. Engl. bot. t. 205.

Franca maritima, *supina*, *saxatilis*, &c. Mich. gen. 23. t. 22. f. 1.

Lychnis supina maritima, *ericæ facie*. Raii syn. 338.

Erica supina marit. anglica. Park. thedt. 1484.

Petiv. brit. t. 10. f. 11. Raii hist. 1716.

Polygonum marit. minus, fol. *serpylli*. Bauh.

pin. 281.—*pufillo vermiculato serpilli folio*. Lob.

ic. 422. Ger. emac. 567. 566. 3.—*fruticofum su-*

pinum ericoides cinereum, *thymi fol. hispanicum*.

Barrel. ic. 714. Bocc. mus. 1. t. 7. f. 11.

Cali f. Vermiculari marinæ non dissimilis planta.

Bauh. hist. 3. 703. 2.

Leaves linear crowded ciliate at the base.

2. *Frankenia hirsuta*.

Lin. spec. 473. Juss. 344. Reich. 111. Gouan.

illustr. 26.

Franca marit. sup. multiflora, &c. Mich. gen. t. 22. f. 2.

Nothria hirsuta. Berg. cap. 171. t. 1. f. 2.

Polygonum creticum, *thymi folio*. Bauh. pin. 281. prodr. 131.

Stems hirsute, flowers in terminating bundles.

3. *Frankenia pulverulenta*. Dusty *Frankenia* or *Sea Heath*.

Lin. spec. 474. Reich. 112. Hudf. angl. 138.

With. 368. Allion. pedem. n. 1609. D'Affo

aragon. n. 323.

Franca marit. quadrifolia, &c. Mich. gen. 23. n. 5.

Anthyllis valentina. *Clus. hist.* 2. 186. *Ger. emac.* 566. 2.—*maritima* *Chamæsyce similis*. *Baub. pin.* 282.
Anthyllidis species quibusdam. *Baub. hist.* 3. 373. f. 374. 1. *Raii hist.* 215.
Alfine maritima supina, fol. *Chamæfices*. *Tourn. inst.* 665. *Raii syn.* 352.
Leaves obovate, retuse, mealy underneath.

DESCRIPTIONS, &c.

1. Root perennial. Stem and leaves thinly sprinkled with white globular particles. Stems numerous, round, branched, trailing. Leaves in little clusters, small, fleshy, rolled back so as to appear almost cylindrical, with a groove underneath, flattened at the base, where they are dilated into a pair of minute, membranaceous ciliate stipules. Flowers at the ramifications of the stem, and in the middle of a bundle of leaves, solitary, sessile: calyx with five, six or seven ribs, and as many teeth, but rarely more than five: corolla purple, petals wedge-shaped, a little scolloped at the end. Nectary a yellow scale. Filaments flat on one side, convex on the other. Style deeply trifid. The flowers are elegant in form and colour, like those of a little red Pink or Campion. The stamens and pistil much resemble the *Lychnis*, to which this plant is nearly allied, though so different in habit^a.

In salt marshes, near Leghorn. In England, Mr. Goodyer found it sept. 3, 1621, at Burfeldon ferry, Hampshire: on the coasts of Essex, Suffex and Kent, abundantly: as in the islands of Shepey and Thanet, Lovingland, just over the water at Yarmouth, about Thurrington in Essex, between Maldon and Goldhanger; in Selfey island, Suffex; near Portsmouth; Tid Goat near Wisbech; near Lynn in Norfolk.—It flowers in July and August.

2. Stems procumbent, pressed as it were close to the ground, panicled and dichotomous. Leaves like those of Thyme, ciliate especially at the base^b. Flowers violet-coloured. Native of the South of France, Apulia, Crete, Siberia, and the Cape of Good Hope.

3. Stems lying flat, slender, branching, with the knots about a finger's breadth from each other. Leaves four at a joint, with very short hairs underneath, the edges not rolled in; petioles short. Flowers in the axils of the leaves, sessile: calyx tough, rigid, with five angles; teeth upright. Annual^c.

Native of the South of France, Italy and Spain. Found on the coast of Suffex, by Mr. Brewer: between Bognor and Brighthelmstone, by Mr. Hudson. It flowers in July.

Gerarde and Ray name it *Valentia Knot-grass*.

These plants were named *Franca* by Micheli, from Giov. Sebast. Franchi, of Lucca, physician at Florence to the Grand Duke Cosmo III. Linneus changed the name to *Frankenia*, in order to perpetuate the name of a person, not of much greater celebrity.

FRANKLINIA. See *Gordonia*.]

FRAXINELLA. See *Dieltamnus*.

FRAXINUS (of Pliny, from *φραξις*, a hedge; or from *frago*, because it grows in locis fragosis—both unsatisfactory.—Ornus from *ορεινος*, mountainous.)

Engl. *Ash-tree*. Fr. *Fresne*.

Lin. gen. n. 1160. *Reich.* n. 1273. *Schreb.* n. 1597. *Tournef.* 343. *Mich.* 107. *Juss.* 105. *Gertn.* t. 49. *Ornus.* *Mich.* 103.

Class. 23. 2. Polygamia Dioecia, or Trioecia. Diandria. *Thunb.* &c.

Nat. order of *Sepiariæ*.—*Fasminee*. *Juss.*

GENERIC CHARACTER.

* *Hermaphrodite*.

CAL. none; or a Perianth one-leaved, four-parted, upright, sharp, small.

COR. none; or Petals four linear, long, sharp, upright.

STAM. Filaments two, upright, much shorter than the corolla. Anthers upright, oblong, four-furrowed.

^a Withering, *Relhan. Engl. Bot.*

^b Gouan.

^c Stokes in *Withering*.

PIST. Germ ovate, compressed. Style cylindric, upright. Stigma thickish, bifid.
 PER. none, except the crust of the seed. (Capsule two-celled, leafy, and flattened at top. G.)
 SEED lanceolate, flattened and membranaceous, one-celled.

* *Female*

The same, except that it has no stamens.

OBS. *F. Ornus* has a calyx and corolla, and is always hermaphrodite.

F. excelsior has neither calyx nor corolla. The female has frequently hermaphrodite flowers; and the hermaphrodite has females interspersed.

ESSENTIAL CHARACTER.

HERMAPHR. Cal. none or four-parted. Cor. none or four-petalled. Stam. two. Pist. one. Seed (or Caps.) one, lanceolate.

FEM. Pist. one, lanceolate.

SPECIES.

1. *Fraxinus excelsior*. Common *Ash-tree*.

Lin. spec. 1509. *Reich.* 4. 356. *mat. med.* 222. *hort. cliff.* 469. *fl. suec.* n. 926. *Huds. angl.* 446. *With.* 1149. *Lightf. scot.* 641. *Relb. cant.* n. 746. *Hall. helv.* n. 528. *Pollich pal.* n. 947. *Villars datph.* 3. 799. *Allion. pedem.* n. 1631. *Gertn. fruct.* 222. *Blackw. t.* 328. *Evel. sylvæ. ed. Hunt.* 145. *Baub. pin.* 416.

Fraxinus. *Dod. pempt.* 771. *Camer. epit.* 64. *Dod. pempt.* 833. *Ger.* 1289. *emac.* 1472. *Lob. ic.* 2. 107. 2. *Hanb.* 1. 9.—*vulgator.* *Baub. hist.* 1. 174. *Raii hist.* 1702.—*vulgaris.* *Park. theat.* 1419. 1.

F. Ornus. *Scop. carn.* n. 1249.

β. *F. diversifolia*. Various-leaved *Ash*.

Ait. hort. kew. 3. 445. γ.

With leaves, entire, three-lobed and ternate.

Leaflets lanceolate, serrate, sessile; flowers without petals.

2. *Fraxinus rotundifolia*. Manna *Ash-tree*.

Ait. hort. kew. 3. 445. *Pluk. alm. t.* 182. f. 4.

F. rotund. folio. *Baub. pin.* 416. *Baub. hist.* 1. 177. f. 2. *Raii hist.* 1703.

Leaflets roundish, acutish, doubly serrate, subsessile, flowers with petals.

3. *Fraxinus Ornus*. Flowering *Ash-tree*.

Lin. spec. 1510. *Reich.* 4. 356. *mat. med.* 222. *hort. upf.* 304. *cliff.* 470. *Mill. illustr.* *Woodv. med. bot.* 104. t. 36.

F. Ornus & *paniculata*. *Mill. dict.* n. 3, 4.

F. florifera. *Scop. carn.* n. 1250.—*botryoides.* *Mor. prælud.* 265. *Hort. angl.* 33. t. 9. *Dubam. arb.* 4. *Raii hist.* 1704.

F. tenuiori & *minori folio.* *Baub. hist.* 1. 177. f. 1.

F. humilior f. *altera* *Theophrasti*, min. & ten. fol. *Baub. pin.* 416.

Leaflets ovate-oblong, serrate, petioled, flowers with petals.

4. *Fraxinus americana*. American *Ash-tree*.

Lin. spec. 1510. *Reich.* 4. 357. *Gron. virg.* 122. *Catesb. car.* 1. t. 80.

F. Novæ Angliæ & *Caroliniana*. *Mill. dict.* n. 5, 6.

F. canadensis. *Gertn. fruct.* 222.

Leaflets quite entire, petioles cylindric.

DESCRIPTIONS, &c.

[Trees. Leaves opposite, unequally pinnate, seldom simple. Flowers in panicles at the ends of the branches. *F. Ornus* with four-petalled hermaphrodite flowers. *F. excelsior*, or common *Ash*, with apetalous polygamous flowers, the hermaphrodites on one tree, and the females on another^a.]

1. The leaves have generally five pairs of leaflets, (four to six) and one odd one, of a dark green. The flowers are produced in loose spikes from the side of the branches, and are succeeded by flat seeds which ripen in autumn.

[The lateral buds produce the flowers, and the terminating one the leaves^b.

Bractes linear, one on the outside at the base of each pedicel. Filaments broad and flat, not so

^a *Jussieu*.

^b *Linn. spec.*

long as the anthers, which are of a blackish purple colour^c. There are not only hermaphrodite and female flowers, but also male ones, so that this species should seem referable to the order triœcia^d. Care should be taken in observing the flowers; for in those which are hermaphrodite, the germ which lies between the two stamens, does not grow up till some days after they appear, so that at first they appear to be male flowers. What Linneus calls a seed, others call a capsule; the seed being covered with a leathery kind of crust, which does not split or open.

Varieties.

The varieties of the common Ash-tree are, 1. That with simple leaves, which, however, sometimes has them lobed and even ternate. 2. With pendulous branches, called the *Weeping Ash*. I have for near forty years known a very fine tree growing naturally so, at Gamlingay in Cambridgeshire; and it is not uncommon in trees of considerable age; especially when growing by the water side, to see the branches hang down. This variety is now become common in the nurseries, but they are engrafted, and carry too much the appearance of art. Imitations seldom are successful, and none of the weeping trees will ever vie with the Babylonian Willow.

3. With variegated leaves, both yellow and white; or gold-striped and silver-striped, as the nursery-men call them.

Micheli has some other varieties, from the different shape of the fruit, the size and form of the leaves, &c. *Nov. gen.* 223.

Name, Use, &c.

The Ash in German and Dutch is *Esche* or *Afche*; in Danish and Swedish *Ask*; in French *le Frêne*; in Italian *Frassino*; in Spanish *Fresno*; in Portuguese *Freixo*; in Russian *Fas*, *Fasen*, *Fassen*, which name prevails in the dialects of the Sclavonian.

The English is from the Saxon *Æsc*. Ray says it has its name from the colour of the bark.

We must be careful not to confound, as some have done, this tree with the Mountain Ash, which is totally different from it. This has the epithet *excellor* from the loftiness of the trunk—that of *mountain*, from the loftiness of the situation which it delights in.

Its usual form of flowering is in march and april, sometimes so late as may: of leafing from april 22 to may 15. Both are sometimes much injured by spring frosts.

The timber of the Ash is next in value to the oak, and in some places equal to it.] It is hard and tough, and of excellent use to the coach-maker, wheel-wright and cart-wright, for ploughs, axle-trees, fellies, harrows, and many other implements of husbandry; for ladders, oars, blocks for pullies, &c. &c. It makes a very sweet fuel, with little smoke, but is apt to crack and fly in burning.—[Anciently it was in great request for spears.

For drying herrings no wood is like it, and the bark is good for the tanning of nets: being not apt to split and scale, it is excellent for tenons and mortises; also for the cooper, turner and thatcher: nothing is like it for pallisade hedges, hop-yards, poles and spars; handles and stocks for tools, spade-trees, &c. When curiously veined, the cabinet-makers use it, and call it Green Ebony^e.

By a remark in Harrison's description of England, prefixed to Holingshed, chap. 19. edit. 1586. it is plain, that the Ash was then esteemed the properest tree for hop-poles.—“Poles are accounted to be their greatest charge (of hops). But sith men have learned of late to sow ashen keies in ash yards by themselves, that inconvenience in short time will be redressed.”

Ash-pollards are of great service where fuel is scarce; a few of them will produce many loads of lop. The loppings make the sweetest of all fires,

^a Withering.

^d Stokes in With.

^e Evelyn.

^f Gentlem. magaz. for 1785. p. 599.

and will burn well either green or dry; only if the branches are suffered to grow too large, the lopping will proportionably injure the tree^g.]

If a wood of these trees be rightly managed, it will turn greatly to the advantage of its owner; for by the underwood, which will be fit to cut every seven or eight years for hoops, or every fourteen years for hop-poles, &c., there will be a continual income more than sufficient to pay the rent of the ground, and all other charges, and still there will be a stock preserved for timber, which in a few years will be worth forty or fifty shillings the tree.

The best season for felling the ash is from november to february; for if it be done either too early in autumn, or too late in the spring, the timber will be subject to be infested with worms, and other insects; but for lopping pollards, the spring is preferable for all soft woods. [Mr. Boucher recommends february.

The ashes of the wood afford very good pot-ash. The bark is used for tanning calf-skin: a slight infusion of it appears of a pale yellowish colour when viewed against the light, but when looked down upon or placed between the eye and an opaque object, it is blue. This blueness is destroyed by the addition of an acid, and alkalies recover it again. It will give a good, though not beautiful green to cloths which have been blued^h.

In the north of Lancashire they lop the Ash to feed the cattle in autumn, when the grass is upon the decline; the cattle peeling off the barkⁱ.—In Queen Elizabeth's time the inhabitants of Colton and Hawkshead fells remonstrated against the number of forges in the country, because they consumed all the loppings and croppings, which were the sole winter food for their cattle^j. In forests, the keepers browse the deer on summer evenings with the spray of ash, that they may not stray too far from their walk^k. The leaves have been gathered to mix with tea; and poor people in some places have made a considerable advantage by collecting them for this purpose^l.—An infusion of them, from half an ounce to an ounce and an half, is a very good purge; and a decoction of two drams of the bark, or six drams of the leaves, has been used to cure agues^m.]

If any cows eat of the leaves or shoots, the butter which is made of their milk will be rank; which is always the case with the butter which is made about Guildford and Godalmin, and in some other parts of Surry, where there are Ash-trees growing about all their pastures: and in good dairy countries they never suffer an Ash-tree to grow.

[The truth of this fact is doubted by others; for it is certain that there is no taste in ash leaves to countenance the assertion, and that this is the next tree after the elm which the Romans recommended for fodderⁿ. I have also passed much time in a country where the ash was almost the only tree in the hedge-rows; and yet I never observed this rankness in the butter.

Cream is apt to turn bitter at the fall of the leaf, and the reason is generally thought to be, that the cattle then pick up the decayed leaves, particularly of the Ash: but the case is the same in the great low pastures which are open and without trees, as in upland inclosures, which abound in them. The only way to avoid the ill taste in butter at that season, is to churn oftener, and to spend the butter whilst it is new.

The ash is, however, a very improper tree for hedge-rows and the borders of arable land: the drip of it is very unfavourable to all other vegetable productions; it exhausts the soil very much; and the roots spread widely near the surface: so that it injures the hedges, and impoverishes the crops that are sown near them.

Nor, though it be a handsome tree, ought it by

^g Hunter's Evelyn.

^h Withering and Stokes.

ⁱ Stokes in Withering.

^j Pennant's tour 1772. p. 29.

^k Gilpin's for. scen. 2. 280.

^l Gentl. mag. as above.

^m Withering.

ⁿ Gentl. mag. as above.

any means to be planted for protection or ornament, because the leaves come out late, and fall early. The fertile trees also generally exhaust themselves so much in bearing keys or fruit, that their foliage is scanty, and their appearance unsightly. The trees, however, which bear female flowers only, have a full and verdant foliage, and make a handsome figure, though late in the season¹. It is well calculated for standards and clumps in large parks and plantations, and for groves and woods². "*Fraxinus in sylvis pulcherrima*."—It will grow in very barren soil, and in the bleakest and most exposed situations³. It is so hardy as to endure the sea winds well, and may therefore be planted on the coast, where few trees will prosper⁴.—If planted by ditch sides, or in low boggy meadows, the roots act as underdrains, and render the ground about them firm and hard; the timber, however, is in this case but of little value⁵. It was natural that our remote ancestors, when the island was over-run with wood, should value trees rather for their fruit than their timber: it is no wonder, then, that by the laws of Howel Dda, the price of an oak or a beech should be 120 pence, while the ash, because it furnished no food for swine, was valued only at four-pence.

The Edda of Woden, however, holds the Ash in the highest veneration; and man is described as being formed from it. Hesiod in like manner deduces his brazen race of men from the Ash; and in his Theogony has Nymphs of the name *Melisse*.

It is probably owing to the remains of Gothic veneration for this tree, that the country people, in the south-east part of the kingdom, split young ashes, and pass their distempered children through the chasm in hopes of a cure. They have also a superstitious custom of boring a hole in an ash, and fastening in a shrew-mouse: a few strokes with a branch of this tree is then accounted a sovereign remedy against cramps and lameness in cattle, which are ignorantly supposed to proceed from this harmless animal⁶. In many parts of the highlands of Scotland, at the birth of a child, the nurse or midwife puts one end of a green stick of this tree into the fire, and while it is burning, receives into a spoon the sap or juice which oozes out at the other end, and administers this as the first spoonful of liquor to the new-born babe⁷.

It is not common to see the Ash of a very great size: instances, however, of large trees are not wanting.—Dr. Plot mentions one of eight feet diameter, valued at thirty pounds.—Mr. Marsham informs us of another in Benel church-yard near Dunbarton in Scotland, measuring in 1768, sixteen feet nine inches in girth, at five feet from the ground.—Mr. Evelyn says that divers were lately sold in Essex, in length one hundred and thirty-two feet.—Mr. Arthur Young, in his Irish tour, mentions some of seventy and eighty feet in height, which were only of thirty-five years growth. The trunk of one on the bank of the Avonmore was above fourteen feet round, and carried nearly the same dimensions for eighteen feet. An Ash at Dunganstown is twelve feet round, and quite clear of branches for thirty feet, where it measures ten feet round, and the arms extend in beautiful forms twenty-eight yards. At Tiny-Park is another, the circumference of which in the smallest part somewhat exceeds nineteen feet, or six feet four inches diameter. At Luttrellstown, the seat of the Earl of Carhampton, are several Ash-trees from eleven to thirteen feet six inches round; one here was sold for 13*l*. At Leixlip castle is a row of eighteen Ash-trees, on a very bleak exposure, measuring from nine to twelve feet round, with fair stems of considerable height, and fine branching heads. At Donirey near Clare castle in the county of Galway is an old Ash that at four feet from the ground measures forty-two feet in circumference, at six feet

high thirty-three feet; the trunk has long been quite hollow, a little school having been kept in it; there are few branches remaining, but these are fresh, and very vigorous. Near Kennity church in the King's county is an Ash whose trunk is twenty-one feet ten inches round, and it is seventeen feet high before the branches break out; these are of enormous bulk. When a funeral of the lower class passes by, they lay the corpse down for a few minutes, say a prayer, and then throw a stone to increase the heap, which has been accumulating round the root.—Finally, in the church-yard of Lochabar in Scotland, Dr. Walker measured the trunk of a dead Ash, which at five feet from the surface of the ground, was fifty-eight feet in circumference.

It is pleasant to observe that amidst the deplorable destruction of valuable timber, the planting of this so extensively useful tree has lately not been neglected; as will appear from the following account.

20 acres, by Wm. Wollaston, Esq. at Great Finborough, Suffolk.

35 acres, by Thos. White, Esq. at Buttsfield, Lancaster, Durham.

16 acres; and 150, 800 on } by Mr. David Day, Frindsbury, Kent.

63,000, on 7 a. } by Edward Loveden Loveden, Esq. Buscot, near Farringdon, Berks.

6000, by John Sneyd, Esq. Belmont, Staffordshire, between 1784 and 1786.

20,000 on } by Dr. Rd. Watson, Bishop of Llandaff, 11 acres } near Ambleside in Westmoreland. 1788.

42,000, by George Ross, Esq. Cromarty.

57,500, by the Earl of Fife, in the county of Murray⁸.

The facility with which the Ash is propagated, and adapts itself to any soil or situation, even the worst; the quickness of its growth, and the general demand for the timber in every part of the country, for a variety of rural and oeconomic purposes, recommend this tree very much to the planter. As a farther encouragement, Mr. Boucher has given an instance of the great profit of an Ash plantation, in a small experiment, which he thus relates.

On half a rood of heavy meadow, chiefly barren red clay and moss, he planted Ash-trees six years old, and eight feet high, in rows four feet asunder, and two feet distance in the row; after four years he cut them down within five or six inches of the ground. Having more than he wanted, in seven years he sold half for pollards and hoops for 40*s*. In six years he cut them again, and sold them for 50*s*. In six years after this he cut them again, and sold them at the same price. There remained now twenty trees, intended to stand for timber, but he was obliged to sell them at twenty-three years growth for 7*s*. a tree. Thus would an acre of indifferent ground properly situated for sale yield in twenty-three years 115 *l*. 10*s*. without any other expense than digging the ground for the first five or six years, and cutting the coppice. Care should be taken to cut them slanting, with a sharp instrument, leaving all the wounds smooth and clean. Observe that no price is mentioned for the first cutting, which he used himself; and that he found he should have had at least one third more for the price of the last cutting. He also found that he had planted too thick, and that he should have had more wood, if the rows had been six feet asunder, and the sets three feet distant in the row.]

2. The shoots of the Manna Ash are much shorter, and the joints closer together than those of the common Ash: the leaflets are shorter, with deeper serratures on their edges, and of a lighter green: the flowers come out from the side of the branches, are of a purple colour, and appear in the spring before the leaves come out. This tree is of humble growth, seldom rising to more than fifteen or sixteen feet in height in England.

[It was cultivated here in 1697, by the Dutchess of Beaufort⁹.

¹ Transact. soc. arts, &c.

² Hort. kew.

³ Gentl. mag. for 1785.

⁴ Boucher. ⁵ Lightfoot.

⁶ Gentl. mag. as above.

⁷ Hunter's Evelyn.

⁸ Woodw. in With.

⁹ Lightf. fl. foot.

The lower parts of the mountains in Calabria abound with the Manna Ash, which grows spontaneously, and without any culture; except that the woodmen cut down all the strong stems that grow above the thickness of a man's leg. Towards the end of July, the gatherers of manna make an horizontal gash, inclining upwards, in the bole of the tree. As the liquor never oozes out the first day, another cut is given on the second, and then the woodman fixes the stalk of a maple leaf in the upper wound, and the end of the leaf in the lower one, so as to form a cup to receive the gum as it distills from each slash. The season continues about a month. The men have only three carlines (1s. 1½d.) for every rotolo; which quantity, containing thirty-three ounces and a third, is sold for twenty-four carlini and three quarters, or somewhat more than ten shillings; if it be in tubular pieces, the price rises one third*. These pieces are called *Manna in cannoli*, and these regular tubes are produced, by applying to the incision thin straw, or small bits of shrubs, upon which the manna runs as it oozes out†.

The trees succeed best in an eastern exposure, in order to warm the juices in the morning, and to inspissate those which the heat has sweated out in the evening‡.

3. The petioles of this are equal; the leaflets lanceolate and equal. In the common Ash the petioles are margined; the leaflets ovate, and the odd one larger than the rest.—Scopoli observed hermaphrodite flowers on one tree, and female on another.

Mr. Miller makes two species out of one; his *F. paniculata* has only or chiefly male flowers. He thus describes them.]—*F. Ornus* is a low tree, about the same height as the preceding; the leaves are much smaller and narrower than those of our Common Ash, but are serrate, and of the same dark colour. The flowers have petals. *F. paniculata* was raised (before 1730) by Dr. Uvedale at Enfield, from seeds which were brought from Italy by Dr. William Sherard.—The leaves have but three or four pairs of leaflets, which are short, broad, smooth, of a lucid green, and irregularly serrate; the midrib is jointed, and swells where the leaflets come out. The flowers grow in loose panicles at the ends of the branches, are of a white herbaceous colour, mostly males, and appear in May.

4. [The fruits or keys are the same as in the common Ash, but much smaller, and narrow§.

Mr. Miller has two sorts of this, which he thus describes.]—*F. Novæ Angliæ* was raised from seeds sent from New England in the year 1724 by Mr. Moore. The leaves have but three, or at most four pairs of leaflets, which are placed far distant from each other; and the odd leaflet runs out into a very long point, they are of a light green, and have no serratures on their edges. This tree shoots into strong irregular branches, but does not grow to a large size in the trunk. *F. caroliniana* was raised from seeds sent from Carolina in the year 1724 by Mr. Catesby. The leaves have seldom more than three pairs of leaflets, the lower being the least, and the upper the largest; these are about five inches long and two broad, of a light green colour, and slightly serrate; the midrib is taper, and has short downy hairs on it: the seeds are broader than those of the common Ash, and are of a very light colour.

[The first of these is also called the *White Ash*; and the second the *Red Ash*. A third named the *Black Ash*, and other varieties, may be found in the nurseries.]

PROPAGATION AND CULTURE.

1. The common Ash propagates itself in plenty by the seeds which scatter in the autumn, so that where the seeds happen to fall in places where cattle do not come, there will be plenty of the plants come up in the spring; but where any person is de-

firous to raise a quantity of the trees, the seeds should be sown as soon as they are ripe, and then the plants will come up the following spring; but if the seeds are kept out of the ground till the spring, the plants will not come up till the year after: it is the same with all the sorts of Ash; so that when any of their seeds are brought from abroad, as they seldom arrive here before the spring, the plants must not be expected to appear till the next year; therefore the ground should be kept clean all the summer where they are sown, and not disturbed, lest the seeds should be turned out of the ground, or buried too deep to grow; for many persons are too impatient to wait a year for the growth of seeds, so that if they do not come up the first year, they dig up the ground, and thereby destroy the seeds.

When the plants come up, they must be kept clean from weeds during the summer; and if they make good progress in the seed-bed, they will be fit to transplant by the autumn; therefore there should be some ground prepared to receive them, and as soon as their leaves begin to fall, they may be transplanted. In taking them up, there should be care taken not to break or tear off their roots; to prevent which, they should be taken up with a spade, and not drawn up, as is frequently practised; for as many of the plants which rise from seeds will out-strip the others in their growth, so it is frequently practised to draw up the largest plants, and leave the smaller to grow a year longer before they are transplanted; and to avoid hurting those which are left, the others are drawn out by hand, and thereby many of their roots are torn off or broken; therefore it is much the better way to take all up, little or big together, and transplant them out, placing the larger ones together in rows, and the smaller by themselves. The rows should be three feet asunder, and the plants a foot and a half distance in the rows; in this nursery they may remain two years, by which time they will be strong enough to plant where they are to remain; for the younger they are planted out, the larger they will grow; so that where they are designed to grow large, they should be planted very young; and the ground where the plants are raised, should not be better than that where they are designed to grow; for when the plants are raised in good land, and afterwards transplanted into worse, they very rarely thrive; so that it is much the best method to make the nursery upon a part of the same land, where the trees are designed to be planted, and then a sufficient number of trees may be left standing upon the ground, and these will out-strip those which are removed, and will grow to a larger size.

Where people live in the neighbourhood of Ash-trees, they may supply themselves with plenty of self-sown plants, provided cattle are not suffered to graze on the land, for they will eat off the young plants, and not suffer them to grow; but where the seeds fall in hedges, or where they are protected by bushes, the plants will come up and thrive.

[To these short and imperfect directions of Mr. Miller, it may not be amiss to add the following paragraphs from Mr. Evelyn, Dr. Hunter, and Mr. Boutcher.

If you would have a considerable wood of Ash at once, prepare your ground as you would for corn, and sow good store of keys, some crab-kernels, &c. with oats. Take off your crop of corn in its season, and the year following the ground will be covered with young ashes, which will either be fit to stand, which I prefer, or be transplanted for divers years after. And these you will find to be far better than any you can gather out of the woods, especially suckers which are worth nothing. The sooner they are removed, the better; and ashes of two years thus taken out of the nursery, shall out-strip those often taken out of the hedge. You may keep the keys in sand for a winter before you sow them, in a covered airy place.

Gather the seeds or keys from healthy young thriving trees in October or November; having prepared

* Swinburn.

† Philos. trans. vol. 60.

‡ Symonds in Young's ann. 3. 161.

§ Linn. spec.

pared the beds, lower them about an inch, by raking some of the earth into the alleys; sow the seed moderately thick, and then throw the earth back again lightly with a spade, or sift it over them an inch thick, and rake it level. In spring, with a very small light iron rake, the teeth about an inch asunder, rake off the moss, pull up the weeds, and sift a little earth over them again.

The second spring, in the first open weather in february, rake off the earth as before very gently, sift fresh over them half an inch thick, and in march and april the young plants will appear in plenty. In october sift some coal-ashes half an inch thick over them.

Next spring prepare some beds six feet wide, with a path of two feet between each: plant all of a size in each bed, at one foot square, first shortening the tap roots, and also the side ones.

They must then be planted out into your nursery in rows three feet asunder, and each plant at one foot distance, where they are to remain till they are finally planted out.

Mr. Boutcher recommends the seeds being spread in an airy loft, and turned till dry, which will be in three or four weeks, and then mixed with sand; to be sown the beginning of april on fresh mellow soil, on beds three and a half feet broad, with alleys eighteen inches, and covered three quarters of an inch deep. The seeds will not appear till the succeeding spring; during this time the beds must be kept clean, and in february they must be raked over: if a little rich mould is thrown over them, it will much promote the growth of the seedlings. The following february or march remove them, and plant them in drills eighteen or twenty inches asunder, and eight or nine inches in the drill. In october remove them again, planting them in lines three and a half feet asunder, and fifteen or sixteen inches in the line, where they may remain three years. The trees will now be seven or eight feet high, of a proper size for extensive plantations. Where large ones are wanted, remove them every fourth year.

Stocks for budding should be planted out in the nursery, a foot asunder, and two feet distant in the rows. When they are one year old, and about the thickness of a bean straw, they will be of a proper size for working. A little after midsummer is the time for the operation, and care must be observed not to bind the eye too tight. They need not be unloosed before the end of september. In march the head of the stock should be taken off a little above the eye, and by the end of the summer following, if the land be good, they will have made strong shoots. The variegated sorts can be increased only in this manner.

2. &c. The other sorts are commonly propagated in the nurseries by budding or ingrafting upon the common Ash; but are not so valuable as those which are raised from seeds, because the stock grows much faster than the grafts; so that the lower part of the trunk, so far as the stock rises, will often be twice the size of the upper; and if the trees stand much exposed to the wind, the grafts are frequently broken off from the stock, after they are grown to a large size.

F. *Paniculata* is generally planted for ornament, the flowers making a fine appearance when they are in beauty, for almost every branch is terminated by a large loose panicle; so that when the trees are large, and covered with flowers, they are distinguishable at a great distance.

All the other sorts serve to make a variety in plantations, but have little beauty to recommend them; and as their wood seems to be greatly inferior to that of the common Ash, there should be few of these planted, because they will only fill up the space where better trees might grow.

[FRENCH HONEYSUCKLE. See *Hedysarum coronarium*.

FRENCH MARYGOLD. See *Tagetes*.

FRESH-WATER SOLDIER. See *Stratiotes*.

Evelyn.

Hunter's Evelyn.

Ibid.

FRIER'S COWL. See *Arum Arisarum*.

FRINGE-TREE. See *Chionanthus*.

FRISEA. See *Thesium*.

FRITILLARIA. (From *Fritillus* a chess or draught-board, like which the petals of the common *Fritillary* are chequered. *Fritillus*, however, is not the board, but the dice-box.—“*Movet arma Fritillo*,” Juv.)

Lin. gen. n. 411. Reich. n. 444. Schreb. n. 559.

Tournef. 201. Juss. 48. Gært. t. 17.—*Corona imperialis*. Tournef. 197, 198. Juss. 49.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Coronariæ*.—*Lilia*, Juss.

GENERIC CHARACTER.

CAL. none.

COR. six-petalled, bell-shaped, spreading at the base. Petals oblong, parallel.

Nectary, an excavation or pit in the base of each petal.

STAM. Filaments six, subulate, approximating to the style, the length of the corolla. Anthers quadrangular, oblong, erect.

PIST. Germ oblong, three-cornered, obtuse. Style simple, longer than the stamens. Stigma triple, spreading, blunt. (Style trifid, with three stigmas.)

PER. Capsule oblong, obtuse, three-lobed, three-celled, three-valved; (superior. G.)

SEEDS very many, flat, semiorbicular on the outside, in a double row.

Obs. *Fritillaria* T. Nectary oblong. Pericarp even: obtusely three-cornered.

Imperialis T. Nectary hemispherical. Pericarp sharp at the edges: hexangular.

ESSENTIAL CHARACTER.

Cor. six-petalled, bell-shaped, with a nectareous cavity above the claws. Stam. the length of the corolla.

SPECIES.

1. *Fritillaria imperialis*. Imperial *Fritillary*, or *Crown Imperial*.

Lin. spec. 435. Reich. 2. 46. hort. ups. 82. cliff. 119. Gært. fruct. 64. Mill. fig. t. 105. Curt. magaz. 194.

Corona imperialis. Best. eyf. vern. V. t. 1, 2, 3.

Dod. 202. Ger. 153. f. 11, 12. emac. 202.

Park. parad. 27, 29. f. 1. Raii hist. 1105.

Lilium, f. Cor. imp. Baub. pin. 79.

Tusai. Clus. hist. 1, 127, 128.

Cor. imp. f. Tusai. Baub. hist. 2. 697. f. 2.

Flowers in a raceme, with a coma over them, but naked below; leaves quite entire.

2. *Fritillaria persica*. Persian *Fritillary*, or *Persian Lily*.

Lin. spec. 436. Reich. 47. hort. ups. 82. cliff. 119.

Lilium persicum. Baub. pin. 79. Radd. elyf. 2. 183. f. 1. Dod. pempt. 220. Ger. 152. emac. 201.

Park. parad. 28. 29. f. 2. Raii hist. 1106:—f. *susianum*. Baub. hist. 2. 699. f. 2.

β. *F. racemosa*. Smaller *Persian Lily*.

Mill. dict. n. 7.

F. ramosa, f. *Lil. pers. minus*. Mor. bles.

Raceme almost naked, leaves oblique.

3. *Fritillaria pyrenaica*. Black *Fritillary*.

Lin. spec. 436. Reich. 47. hort. cliff. 81. Pallas.

itin. 1. 147.

F. aquitana. Mill. dict. n. 2.

F. fl. minore. Baub. pin. 64. Raii hist. 1108.

F. pyrenæa. Clus. hist. 2. 256.—f. *apennina*. Park.

parad. 43. t. 41. f. 11.

F. aquitana minor fl. luteo obsoleto. Ger. emac.

150. f. 3.

Meleagris f. *Fr. pyrenæa fl. minore*. Baub. hist.

2. 683. f. 1.

Lowest leaves opposite, some of the flowers having a leaf interposed between them.

4. *Fritillaria meleagris*. Common *Fritillary*, or *Chequered Lily*.

Lin. spec. 436. Reich. 47. fl. succ. n. 283. hort.

ups. 31. cliff. 119. Hudf. angl. 144. With.

345. Curtis londi 3. 20. Relb. cant. n. 264.

Hall. belv. n. 1235. Scop. carn. n. 405. Jacqu.

austr.

austr. 5. *app.* t. 32. *Allion. pedem.* n. 1888.
Villars dauph. 2. 249.

α. *F. præcox purpurea variegata.* *Baub. pin.* 64.
Mill. dict. n. 1. *Common early purple.*

F. vulgaris. *Park. parad.* 40. *Raii hist.* 1106.

F. & F. variegata. *Ger.* 122. f. 1, 2. *emac.* 149.
f. 1, 2.

Meleagris. *Renealm. spec.* 147. t. 146.—f. *Fr.*
dilutior & saturatior. *Baub. hist.* 2. 681.

β. *F. alba variegata.* *Baub. pin.* 64. *Variegated*
white.

γ. *F. alba.* *Park. parad.* 42.—*præcox.* *Baub.*
pin. 64. *Raii hist.* 1107. *Early White.*

δ. *F. ferotina atropurpurea.* *Baub. pin.* 64. *Raii*
hist. 1107. *Late dark purple.*

F. fl. atrorubente. *Park. parad.* 42?

F. nigra. *Mill. dict.* n. 3?

ε. *F. lutea.* *Mill. dict.* n. 4.—*maxima italica.* *Park.*
parad. 43. f. 8. *Raii hist.* 1107. *Yellow.*

ζ. *F. umbellata.* *Mill. dict.* n. 5.—*umbellifera.*
Baub. pin. 64. *Raii hist.* 1108.—*hispanica umb.*
Park. parad. 44.

All the leaves alternate, stem one-flowered.

[5. *Fritillaria cantoniensis.*

Lour. cochinch. 206.

Leaves three-nerved, the upper ones opposite; flowers
in pairs, axillary.]

DESCRIPTIONS, &c.

1. The Crown Imperial has a large round scaly root of a yellow colour, and a strong odour of a fox; the stalk rises to the height of four feet or upwards; it is strong, succulent, and garnished two-thirds of the length on every side, with long narrow leaves ending in points, which are smooth and entire; the upper part of the stalk is naked, a foot in length; then the flowers come out all round the stalk upon short foot-stalks, which turn downward, each sustaining one large flower. Above these rises a spreading tuft of green leaves, which are erect, and called the Coma. This plant flowers the beginning of april, and the seeds are ripe in july.

[Capsule a hexangular prism, the angles produced into wings; each wing scored on the outside with a deep broad furrow, and furnished with a double thick wing; on the inside a partition in the middle, to each side of which the seeds are fixed horizontally, and ciliated on both edges of the future with white hairs like whiskers turned inwards^a.]

The variety with yellow flowers, that with large flowers, and those with double flowers, are the most valuable; but that which has two or three whorls of flowers above each other, makes the finest appearance; though this seldom produces its flowers after this manner the first year after removing, but the second and third year after planting, the stalks will be taller, and frequently have three tier of flowers, one above another, which is called the Triple Crown. The stalks of this sort frequently run flat and broad, when they produce a greater number of flowers than usual; but this is only a luxuriancy of nature, not constant, though many of the writers have mentioned it as a particular variety.

As this is one of the earliest tall flowers of the spring, it makes a fine appearance in the middle of large borders, at a season when such flowers are much wanted to decorate the pleasure-garden: but the rank fox-like odour which they emit is too strong for most people, and renders the flowers less valuable than they would otherwise be.

[The beauty, however, of the plant, and the splendor of the magnificent pendulous flowers will ever secure this a place in large gardens and plantations. The singular nectary cannot but engage the attention of the curious observer: it is a white glandular cavity at the base of each petal, and has a drop of limpid nectareous juice standing in it, when the flower is in vigour. Another of the wonders of nature may be observed in the peduncles, which bend down whilst the plant is in flower, but become upright as the seed ripens. This cir-

cumstance, however, is by no means peculiar to this plant, but common to it with many others.]

Varieties.

1. Common Crown Imperial, of a dirty red colour.

2. Yellow Crown Imperial, of a bright yellow.
Mill. fig. t. 105.

3. Bright red Crown Imperial, called Fufai.

4. The pale yellow Crown Imperial.

5. The yellow striped Crown Imperial.

6. The large flowering Crown Imperial.

7. The broad-leaved late red Crown Imperial.

8. The double and triple crowned Imperial Crown.

9. The double red Crown Imperial.

10. The double yellow Crown Imperial.

11. The silver striped leaved Crown Imperial.

12. The yellow striped leaved Crown Imperial.

There are some few other varieties which are mentioned in the catalogues of the Dutch florists, but their distinctions are so minute that they are not distinguishable, so I shall pass them over, as those here inserted are all that I have seen growing either in England or Holland, which deserved any distinction.

[Introduced at Vienna in 1576.

Gerarde had great plenty of it in his garden in 1596; he calls it a rare and strange plant. Parkinson (in 1629) had not observed any variety in the colour of the flower. Lobel, however, enumerates many varieties.—It certainly came into these parts of Europe from Constantinople, but it is only conjectured by Clusius that its native country is Persia.

The Crown Imperial has the same name in all the European languages; in German *Kaiserkrone*, in Danish *Keiserkrone*, in Swedish *Keisarkrona*, in French *la Couronne Imperiale* or *la Fritillaire Imperiale*, in Italian *la Corona Imperiale*, in Spanish *la Corona Imperial.*

2. The Persian Lily has a large round root. Stem three feet high, the lower part closely garnished on every side with leaves, which are three inches long, and half an inch broad, of a gray colour, and twisted obliquely. Flowers in a loose spike at the top, forming a pyramid: they are shorter than the other sorts, spread wider at the brim, and are not bent down; they are of a dark purple colour, and appear in may, but seldom produce seeds in England.

[The lowest leaves grow in pairs, three or four together, opposite, in whorls^b.

Root the size of an orange, of a taste extremely bitter, but without any remarkable smell^c.

Supposed to be a native of Persia; and to have appeared in Europe in 1573. Gmelin found it in Russia. Cultivated here in Gerarde's garden 1596. In his herbal he says that it is a denizon in some few of our London gardens.—Parkinson (1629) informs us that it was sent unto us by the means of divers Turkey Merchants from Constantinople; and especially by the procurement of Mr. Nicholas Lete, a worthy merchant, and a lover of all fair flowers.]

β. The small Persian Lily, [which Mr. Miller makes a distinct species] has a much shorter stem, and smaller leaves; the stem branches out at the top into several small peduncles, each sustaining one dark-coloured flower.

3. The leaves of this are broader, and of a deeper green than the common Fritillary; the lower leaves are opposite, but those above alternate. Stem a foot and half high, terminated by two flowers of an obscure yellow colour, and spreading more at the brim than those of the common Fritillary, but turned downwards in the same manner. It flowers three weeks after that. It is a native of France and Russia.

4. [Root a solid bulb or tuber, about the size of a hazel nut, white or yellowish-white, roundish, compressed, divisible into several, inclosed by the withered, wrinkled bulb of the preceding year, as

^a Gartner.

^b Linn. spec.

^c Bauh. hist.

in a case. *Stem* from six to twelve, fifteen and even eighteen inches in height, advancing considerably in length after flowering; it comes out from the side of the root, is simple, upright, round, smooth, glaucous, and not unfrequently purplish. *Leaves* three or four, sometimes five or six, grass-like, distantly alternate, half embracing, round on the under, and hollow on the upper side, somewhat twisted and glaucous. *Flower* usually single, sometimes two, or even three, on the top of the stem, large, pendulous, at first somewhat pyramidal, but afterwards bell-shaped; petals chequered with purple and white, or purple and greenish yellow; in our wild ones the colour is a dull red chequered with a deeper, but without mixture of either green or yellow; the three outer petals are gibbous at the base, the three inner plane: nectary narrow, greenish, fleshy and glandular, connecting the filaments to the petals: filaments twice the length of the germ; anthers flattish, with four grooves, and a greenish point at the top of each, two-celled, nearly as long as the filaments, becoming shorter by one half on the shedding of the pollen: germ scarce manifestly three-cornered; style downy, round, a little thickened above, divided into three segments, which are round, diverging, and marked both within and without with a groove, visible by a magnifier; stigmas simple, villose: capsule a prism of three blunt corners^d, not pendulous, but erect.

Native of the southern countries of Europe. [Found also in a wild state near Upsala in Sweden, but escaped from a garden. In England it was first mentioned by Mr. Blackstone to grow in Mawde fields near Rissip common, Middlesex, and to have been observed there by Mr. Ashby, of Breakspears, above forty years. It has since been found between Mortlake and Kew, near Enfield, in a wood near Bromley in Kent; near Bury St. Edmunds, and between Laxfield and Stirrup-Street, in Suffolk; Westhoe near Linton in Cambridgeshire; near Leicester; and in a meadow near Blymhill, in Staffordshire.

It flowers in april and may, and if the season be mild, at the beginning of the former month, or even the end of march.

The common Fritillary is named in German *Kiebitzey*, in Dutch *Kievitsbloem*, in Danish *Vibeæg*, in Swedish *Vipaegg*, in French *la Fritillaire Meleagre* or *Panachee*, *le Damier*, in Italian *Fritillaria*, *Giglio variegato*, *Meleagride*, *Fritillaria scaccheggiana*, in Spanish *la Fritillaria*, *el Meleagro*.

Gerarde calls it *Turkey-ben* or *Guinea-ben flower*, and *Checkered Daffodill*. The curious and painful herbarist of Paris, John Robin, sent him many plants for his garden, where they prospered (as he informs us) as in their own native country; and were then greatly esteemed for the beautifying of our gardens, and the bosoms of the beautiful.

Some call it, says Parkinson, *Narcissus Caparonius*, from the first finder Noel Caparon, an Apothecary then dwelling at Orleans, but shortly after murdered in the massacre of France. He leaves it to every one's will, to call it in English either *Fritillaria*, as it is called of most, or *checkered Daffodill*, or *Guinea-ben flower*; or, as he does, *checkered Lilly*. Lobel makes it a kind of *Tulip*. The country people about Rissip call the flowers *Snake's-heads*.

Many varieties have been sent from Spain, Portugal, Italy, &c. The most remarkable of these are here recited.] Many others have been raised from seed by the florists, which differ in the size and colour of their flowers: these amount to a considerable number in the catalogues of the Dutch florists: but as new varieties may be continually produced, and these flowers are no longer in such esteem as they were formerly, it would be to little purpose to enumerate them.

[Parkinson (Parad. a. 1629) has twelve varieties. —1. The Common purple Fritillary. 2. Blood-red. 3. Great purple or red. 4. White. 5. Double

blush. 6. Pure yellow. 7. Checkered yellow. 8. Great yellow Italian. 9. Small Italian. 10. Small yellow of Portugal. 11. Black. 12. Spanish black.

Johnson in Gerarde (a. 1636) has thirteen, some of them different from Parkinson's.

Ray (a. 1688) enumerates twelve, chiefly from Parkinson and the two brothers, John and Caspar Bauhin.]

Mr. Miller reckons as distinct species, besides 1. α . the common early purple; of which there is a variety with a double flower. 2. δ . *The Black* (n. 3.) seldom rising more than a foot high, the leaves shorter than in the foregoing, each stalk terminated by three or four flowers, rising above each other, of a dark purple colour, with yellowish spots; and flowering three weeks later than the common purple. 3. ϵ . *The great yellow Italian*, about a foot high, with spear-shaped leaves four inches long and one broad, sometimes opposite, but generally alternate; the stem terminated by one large flower of a yellowish colour, chequered with light purple, and flowering the beginning of april. There are two or three subordinate varieties of this, which differ in the size and colour of their flowers, and the breadth of their leaves. 4. ζ . *Umbellate Fritillary*, a foot and half high, with shorter and broader leaves, of a grayish colour; the flowers produced round the stalks like those of the Crown-Imperial, of a dark purple colour, chequered with a yellowish green. This flowers three weeks later than the common purple.

[He does not mention the *white*, (β , γ .) which sometimes is almost without any spots or marks; these, however, are frequently visible enough, and in some flowers again a faint blush-colour may be observed.

5. Stem annual, quite simple, hard, slender, round, upright, a foot and half high. Leaves smooth, quite entire, rounded at the base, then conical, with a long point. Flowers pendulous, the whole dusky purple, and without smell. Corolla thick, six-cornered, almost closed. Style trifid, with simple stigmas. In colour it agrees with *Fr. serotina atropurpurea* of Bauhin's pinax, 64. n. 8:—in the varying situation of the leaves with *Fr. pyrenaica* of Linneus; but it is a different species from both. Cultivated about Canton in China^e.]

PROPAGATION AND CULTURE.

1. This may be propagated by seeds, or offsets from the root; the first is too tedious for most of the English florists, because the plants so raised are six or seven years before they flower; but the Dutch and Flemish gardeners, who have more patience, frequently raise them from seeds, so get some new varieties, which reward their labour. The method of propagating these flowers from seeds being nearly the same as for the Tulip, the reader is desired to turn to that article, where there are full directions for performing it.

The common method of propagating them here, is by offsets sent out from the old roots, which will flower strong the second year after they are taken from the roots; but in order to have plenty of these, the roots should not be transplanted oftener than every third year, by which time each root will have put out several offsets, some of which will be large enough to flower the following year, so may be planted in the borders of the flower-garden, where they are to remain; and the smaller roots may be planted in a nursery-bed, to grow a year or two according to their size; therefore they should be sorted, and the smallest roots planted in a bed together, which should remain there two years, and the larger by themselves to stand one year, by which time they will have acquired strength enough to flower, so may then be removed into the pleasure-garden.

The time for taking up these roots is in the beginning of july, when their stalks will be decayed;

^d Curtis, Woodw. Mss. Withering.

^e Loureiro.

and they may be kept out of the ground two months, but they should be laid single in a dry shady room, but not in heaps, or in a moist place, which will cause them to grow mouldy, and rot. The off-sets should be first planted, for as these are small, they will be apt to shrink if they are kept long out of the ground.

As the roots are large, they must not be planted too near other flowers; and when they are planted in beds by themselves, they should not be nearer than a foot and a half in the rows, and two feet row from row; they should be planted six inches deep at least, especially the strong roots: they delight in a light soil, not too wet, nor very full of dung; therefore if any dung is laid upon the borders where they are planted, it should be buried pretty deep, so as to be two or three inches below the roots.

2, 3, 4. These plants are propagated either by seeds, or off-sets from the old roots; by the first of which methods new varieties will be obtained, as also a larger stock of roots in three years, than can be obtained in twenty or thirty years in the latter method: I shall therefore first treat of their propagation by seeds.

Having provided yourself with some good seeds, saved from the fairest flowers, you must procure some shallow pans or boxes, which must have some holes in their bottoms to let out the moisture; these you should fill with light fresh earth, laying a few potshards over the holes, to prevent the earth from stopping them; then, having laid the earth very level in the boxes, &c. you must sow the seeds thereon pretty thick, covering it with fine sifted earth a quarter of an inch thick. The time for sowing the seed is about the beginning of august; for if it be kept much longer out of the ground, it will not grow; then place the boxes or pans where they may have the morning sun until eleven o'clock, observing, if the season proves dry, to water them gently, as also to pull up all weeds as soon as they appear; for if they are suffered to remain until they have taken deep root into the earth, they would draw the seeds out of the ground whenever they are pulled up. Toward the latter end of september you should remove the boxes, &c. into a warmer situation, placing them close to a hedge or wall exposed to the south; if they are sown in pots, these should be plunged into the ground, but they are best in tubs; these should be covered in severe frost. In this situation they may remain until the middle of march, by which time the plants will be come up an inch high; you must therefore remove the boxes, as the weather becomes hot, into a more shady situation; for while the plants are young, they are liable to suffer by being too much exposed to the sun: and in this shady situation they may remain during the heat of the summer, observing to keep them clear from weeds, and to refresh them now and then with a little moisture; but be careful not to give them much water after their leaves are decayed, which would rot their roots. About the beginning of august, if the roots are very thick in the boxes, you should prepare a bed of good light fresh earth, which must be levelled very even, upon which you should spread the earth in the boxes in which the small roots are contained, equally covering it about one-fourth of an inch thick with the same fresh earth: this bed should be situated in a warm position, but not too close to hedges, walls, or pales, which would cause their leaves to be long and slender, and make the roots weaker than if placed in a more open exposure.

In this bed they may remain until they flower, which is generally the third year from sowing; at which time you should put down a mark to the roots of all such as produce fair flowers, that at the time of taking them out of the ground, which ought to be soon after their green leaves are decayed, they may be selected into a bed amongst your old roots of this flower, which, for their beauty, are preserved in the best gardens; but the other less valuable flowers may be planted in the borders of the parterre-gar-

den for their variety, where, being intermixed with other flowers of different seasons, they will make a good appearance.

The fine sorts of this flower should remain undisturbed three years, by which time they will have produced many off-sets; and should be taken up when their leaves are decayed, and planted into a fresh bed, taking such of their off-sets as are large enough to produce flowers to plant in the flower-garden; but the smaller roots may be planted into a nursery-bed until they have obtained strength enough to flower; but you must never suffer these roots to lay out of the ground when you remove them, but plant them again immediately, otherwise they will perish.

During these three years which I have advised the roots to remain in the beds, the surface of the earth should be stirred every autumn with a trowel, observing not to go so deep as to bruise the root, and at the same time lay a thin cover of very rotten dung or tanner's bark upon the surface of the beds; which, being washed into the ground, will cause the flowers to be larger, as also the roots to make a greater increase: you must also observe to keep them constantly clear from weeds, and those roots which you would preserve with care, should not be suffered to feed.

When a stock of good flowers are obtained, they may be preserved and increased in the same manner as other bulbous rooted flowers, which is by off-sets sent out from their roots, which should be taken off every other year from the finest sorts; but the ordinary flowers may remain three years undisturbed, in which time they will have multiplied so much, as that each root will have formed a cluster; so that if they are left longer together, the roots will be small, and the flowers very weak; therefore, if these are taken up every other year, the roots will be the stronger. These roots may be treated in the same manner as Tulips, and other bulbous rooted flowers, with this difference only, that the roots will not bear to be kept out of the ground so long; therefore if there should be a necessity for keeping them out of the ground any time, it will be best to put the roots into sand to prevent their shrinking.

As these flowers come out early in the spring, they make a pretty appearance in the borders of the pleasure garden, where they are planted in small clumps; for when they stand single in the borders, they make but a poor figure.

FRITILLARIA CRASSA. See *Stapelia*.

[FROG-BIT. See *Hydrocharis*.]

FUCHSIA. (So named in honour of Leonard Fuchs, a famous German Botanist, author of *Historia Stirpium* in 1542, fol. with 516 excellent engravings in wood.)

Lin. gen. n. 128. Reich. n. 518. Schreb. n. 652.

Plum. 14. Juss. 320. Skinnera Forst. 29.

Dorvallia Commers.

Class. 8. 1. Octandria Monogynia.

Nat. order of *Onagrea*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, funnel-form, coloured, superior, deciduous. Tube ovate at the base, contracted above it, then gradually widening, patulous, angular. - Border short, four-parted; parts ovate, acuminate, spreading.

COR. Petals four, ovate, acuminate, sessile, spreading, the same length with the parts of the calyx.

STAM. Filaments four (or eight) filiform, erect, inserted into the tube of the calyx below the middle, and a little longer than the tube. Anthers twin.

PIST. Germ inferior, ovate, below the insertion of the calyx constricted. Style simple, the length of the stamens. Stigma obtuse (club-shaped?)

PER. Berry ovate, four-grooved, four-celled.

SEEDS many, ovate, fixed in a double row to a columnar receptacle in the middle of the berry.

ESSENTIAL CHARACTER.

Cal. one-leaved coloured, bearing the corolla, very large. Pet. four, small. Berry inferior, four-celled, with many seeds.

SPECIES.

SPECIES.

1. *Fuchsia triphylla*. *Three-leaved Fuchsia*.
Lin. spec. ed. 1. app. 1191. ed. 2. 159. syst. 361.
Reich. 2. 160. Mill. dict.
- F. triphylla*, flore coccineo. *Plum. gen. 14. ic. 133.*
f. 1.
- F. racemosa*. *Lamarck encycl. 565.*
Peduncles one-flowered, leaves by threes.
2. *Fuchsia coccinea*. *Scarlet-flowered Fuchsia*.
Ait. hort. kew. 2. 8. Curtis magaz. 97.
- F. magellanica*. *Lamarck encycl. 565.*
Thileo. Feuillee itin. 64. t. 47.
Leaves opposite, ovate, toothblotted, petals obovate,
obtuse.
- [3. *Fuchsia multiflora*:
Lin. syst. 361. Reich. 161.
Peduncles many-flowered.
4. *Fuchsia excorticata*.
Lin. syst. 361. suppl. 217. Lamarck encycl. 566.
Skinnera excorticata. Forst. gen. 58. t. 29.
Peduncles axillary, one-flowered, leaves ovate, alter-
nate.
5. *Fuchsia involucrata*.
Swartz prodr. 62.
Flowers involucred.

DESCRIPTIONS, &c.

1. Root woody, branched, reddish. Stem herbaceous, upright, quite simple, reddish green, leafy, two feet high at most. Leaves lanceolate, entire, pale green, a little firm or coriaceous, sessile, disposed in threes. Peduncles one-flowered, scattered, and forming a straight terminating raceme. Flowers large, very fine, of a very bright scarlet, having eight stamens, not projecting beyond the flower; and the berry is a little larger than an olive, fleshy, soft, reddish black, somewhat pubescent, of a very pleasant taste; the seeds are small and brown. Plumier observed this plant in St. Domingo^a, and it was afterwards found by Dr. Houstoun at Carthage in New Spain, whence he sent the seeds into England, [it must have been cultivated here, therefore by Mr. Miller before 1733, in which year Dr. Houstoun died.

2. This is a shrub, growing to the height of six or seven feet. The leaves are commonly opposite, on short petioles, of a fine green, having the veins tinged with red, with a fine down on them. Peduncles axillary, one-flowered, longer than the leaves. Flowers pendulous, bright scarlet, with a four-parted calyx, four petals, and eight stamens.

Scarlet *Fuchsia* is a plant of peculiar beauty, producing its rich pendant blossoms through most part of the summer: the petals in the centre of the flower are particularly deserving of notice; they somewhat resemble a small roll of the richest purple-coloured ribband^b.

It is a native of Chili, and was introduced into the royal garden at Kew in 1788, by Captain Firth. It flowers from may to july^c. Mr. Lee of Hammer-smith is said to have had this plant first for sale^d.

3. This was found in South America by Mutis^e.

4. This is a very smooth tree. Leaves on long petioles, hoary underneath, very finely serrate. Flowers pendulous, very large. Germ oblong. Corolla funnel-shaped; tube globular at the base, then cylindric, and gradually widening into the border, which is eight-cleft, four of the alternate segments lanceolate, spreading, the other four one-third only the size of the others, and erect^e.

According to Forster, there is no corolla, except four nectaries, which are ovate-lanceolate, erect, interposed between the segments of the calyx, and only one-third of their size. Others call these the petals. The tube of the calyx is callous at the base, and curved in a little; the segments lanceolate, horizontal, only half the length of the tube. Filaments eight, the length of the border; anthers or-

^a Lamarck.^b Curtis.^c Hort. kew.^d Curtis.^e Linn. suppl.

biculate, fastened by the back to the filaments. Style filiform, erect, longer than the calyx. Stigma globular, tubercled. Capsule (Berry?) oblong.

Native of New Zealand. Forster gave it the name of *Skinnera* from Mr. Skinner of Oxford—"acutissimo oculatissimoque botanico Oxoniensi," as he expresses it^f.

5. Native of Jamaica^g.]

PROPAGATION AND CULTURE.

1. This is propagated by seeds, which must be sown in pots filled with rich light earth, and plunged into a hot-bed of tanner's bark, and treated in the same way as other seeds from warm countries. In about a month or six weeks after the seeds are sown, the plants will begin to appear, when they should be carefully cleared from weeds, and frequently refreshed with water to promote their growth; and when they are about two inches high, they should be shaken out of the pot, and separated carefully; then plant each into a small pot filled with light rich earth, and plunge them again into a hot-bed of tanner's bark, being careful to screen them from the sun until they have taken new root; after which time they must have fresh air admitted to them every day in proportion to the warmth of the season, and should be frequently watered. As the season advances and becomes warm, the glasses of the hot-bed should be raised higher, to admit a greater share of air to the plants, to prevent their drawing up weak; and when the plants are grown so tall as to reach the glasses, they should be removed into the bark-stove, and plunged into the tan-bed. In winter these plants require to be kept very warm, and at that season they must not have much water, but in summer it must be often repeated.

These plants are too tender to thrive in the open air in this country, even in the hottest part of the year; therefore they should constantly remain in the stove, observing to let in a large share of fresh air in summer, but in winter they must be kept warm; with this management the plants will produce their flowers, and make a beautiful appearance in the stove, amongst other tender exotic plants.

[The second species, which we now have in our stoves, if it be really different from the first, may however be treated in the same manner.

Though it will not succeed well in the winter, nor be easily propagated unless in a stove, yet it will flower very well during the summer months, in a good green-house or hot-bed frame. It is easily increased by layers and cuttings, as well as seeds^h.

FUCOIDES. See *Fucus*.

FUCUS (of *Pliny*. Hence *fucare*, to dye or paint, some of the *Fuci* or *Sea-weeds* being used for this purpose.)

Class. 24. 3. Cryptogamia Algæ.

Lin. gen. n. 1205. Schreb. 1671.

GENERIC CHARACTER.

MALE. *Vesicles* smooth, hollow, with villose hairs within, interwoven.

FEM. *Vesicles* smooth, filled with gelly, sprinkled with immersed grains prominent at the tip. *Seeds* solitary.

This genus comprehends most of those plants which are commonly called *Sea-weeds*. Fifty-eight species are enumerated in the fourteenth edition of *Systema Vegetabilium*.—Sixty-eight British species, besides many varieties, are enumerated in Dr. Withering's *Botanical Arrangements*.

They may all be used to manure land, or they may be burnt to make kelp, which is an impure fossil alkali. Many of them make very beautiful specimens for the herbarium, and are often seen disposed on paper so as to form a sort of picture.

Some of the species are eaten, either fresh out of the sea, or boiled tender, with butter, pepper and vinegar: as *Fucus saccharinus*, *digitatus*, *palmatus*, &c. If the first of these be washed in spring water, and then hung up in a warm place, a substance like sugar exsudes from it. The last is called by the

^f Forst. gen.^g Swartz.^h Curtis.

Irish *Dulleß*; by the Scotch *Dills*; in Northumberland *Dulls* or *Dulse*. Being soaked in fresh water, it is eaten either boiled or dried, and in the latter state has something of a violet flavour. It is sold in the streets of Dublin, being dried, and is said to sweeten the breath, and to kill worms. The poor in the north of Ireland eat it boiled.

Concerning the fructification and mode of propagation of these and other marine plants, see Reaumur in act. gall. 1711. Gmelin hist. Fucorum. Gærtner de fructibus & feminibus. And Figures and Descriptions of Marine Plants, by Thomas Velley, Esq.

Fucus. See *Conserva*, *Lichen*, *Ruppia*, *Tremella*, *Ulva*, *Zostera*.

FUIRENA. (So named by Rotböll in memory of George Fuiren, a learned Dane.)

Lin. gen. Schreb. n. 90. suppl. 11. nov. gen. gram. 25. Rotb. gram. 70. Juss. 26.

Class. 3. 1. Triandria Monogynia.

Nat. order of *Calamariæ*.—*Cyperoidæ*. Juss.

GENERIC CHARACTER.

CAL. Ament oblong, cylindric, imbricate: scales channelled, wedge-shaped, three-keeled, awned at the tip: awn cylindric, straight, shorter than the glume. Flowers between the scales, solitary, very small, fitting on a tubercle. Glume, besides the amentaceous scales, none.

COR. Glume three-valved; valves petal-shaped, obcordate, somewhat membranaceous, flat, quite entire, ending in an awn that is bent in.

STAM. Filaments three, linear, inserted into the receptacle between the corolline valves. Anthers linear, erect.

PIST. Germ large, three-cornered. Style filiform. Stigmas two, revolute.

PER. none, except the withered corolla, inclosing the seed.

SEED three-cornered, naked, without any villose hairs.

ESSENTIAL CHARACTER.

Ament imbricate, with awned scales. Cal. none. Cor. with three petal-shaped obcordate glumes, ending in a tendril.

SPECIES.

1. Fuirena paniculata.

Lin. syst. 102. suppl. 105. Rotb. gram. 70. t. 19. f. 3. Lamarck encycl. 566.

Scirpus caule pentagono, ad nodos florida. Sloan. jam. 1. 121?

DESCRIPTION, &c.

This is a lofty Grass. Leaves on the stem, with loose, pitcher-shaped, hairy sheaths. Panicles terminating and axillary, composed of cylindric, scabrous spikelets^a: these are oblong, about three lines in length, conglomerate, blackish, imbricate with obovate, concave, rigid scales, having three keels uniting at top into an awn. It has the appearance of a Scirpus^b.—Native of Surinam, where it was observed by Rolander, and of Jamaica.

FUMANA. See *Cistus*.]

FUMARIA. (Because it affects the eyes, like smoke; hence also its Greek name, *καπνος*.)

Engl. *Fumitory*. Fr. *Fumeterre*.

Lin. gen. n. 849. Reich. n. 920. Schreb. n. 1154. Tournef. 237. Juss. 237. Gærtn. 115.

f. 2. Capnoides. Tournef. 237. Gærtn. 115.

f. 3. Cysticapnos. Boerb. 1. 310. Gærtn. 115.

f. 1. Corydalis. Dillen. gen. 7. Bicucullatu. Juss. aet. gall. 1733.

Class. 17. 2. Diadelphia Hexandria.

Nat. order of *Corydales*.—*Papaveraceæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth two-leaved: leaflets opposite, equal, lateral, erect, acute, small, deciduous.

COR. oblong, tubular, ringent, palate prominent, closing the throat.

Upper lip flat, obtuse, emarginate, reflex.

(The Banner.)

^a Linn. spec.

^b Rotb.

Nectary the base of the upper lip prominent backward, obtuse.

Lower lip entirely similar to the upper, keeled towards the base. (The Keels.)

Nectary the keeled base, but in this less prominent.

Throat four-cornered, obtuse, perpendicularly bifid. (The Wings.)

STAM. Filaments two, equal, broad, one within each lip, inclosed, acuminate. Anthers three at the end of each filament.

PIST. Germ oblong, compressed, acuminate. Style short. Stigma orbiculate, erect, compressed.

PER. Silicle one-celled.

SEEDS roundish.

OBS. The stamens are almost the only part of the fructification observed to be constant in this genus.

Fumaria offic. has a roundish silicle, frequently with only one seed, and deciduous. 11 to 14.

Pseudo-Fumaria Riv. has an ovate-acuminate, two-valved silicle, with a receptacle like a thread interposed between the sutures on both sides. 5.

Capnoides Tourn. has a very long silicle, almost cylindric, two-valved, with the receptacle as in the foregoing. 9.

Cysticapnos Boerb. has a two-valved pericarp, within a very large inflated calyx. 15.

Capnorchis Boerb. The nectary of the lower lip is as prominent as that of the upper. 1.

ESSENTIAL CHARACTER.

Cal. two-leaved. Cor. ringent. Filam. two, membranaceous, with three anthers on each.

SPECIES.

* Corollas with two spurs.

1. Fumaria Cucullaria. Naked-stalked Fumitory.

Lin. spec. 983. Reich. 3. 376. mant. 437. hort. cliff. 351. Gron. virg. 103. Corn. canad. 127. Pluk. alm. t. 90. f. 3.

Capnorchis americana. Boerb. lugdb. 1. 309.

Bicucullata canadensis, rad. tuberosa squamata. Aet. gall. 1733.

Scape naked.

[2. Fumaria spectabilis.

Lin. spec. 983. Reich. 377. amæn. 7. t. 7. Gmel. fib. 4. 63. n. 90.

Flowers two-lobed behind, stem leafy.

3. Fumaria fungosa. Spongy-flowered Fumitory.

Ait. hort. kew. 3. 1.

Flowers bigibbous at the base; siliques linear, ancipital, covered by an inflated fungous corolla, leaves climbing.

** Corollas with one spur.

4. Fumaria nobilis. Great-flowered Fumitory.

Lin. syst. 636. Reich. 377. Gmel. fib. 4. 66. t. 34. Jacqu. hort. 2. 53. t. 116. Gærtn. fruct. 2. 163.

Stems simple, bractes shorter than the flower, undivided.]

5. Fumaria bulbosa. Bulbous Fumitory.

Lin. spec. 983. Reich. 378. mat. med. 168. hort. cliff. 351. fl. suec. n. 631. Scop. carn. n. 864. Crantz. austr. 435. Allion. pedem. n. 1083. Villars dauph. 3. 385.

a. F. bulbosa cava. Lin. spec. fl. suec. 7. Hollow-rooted Bulbous Fumitory.

F. bulbosa. Neck. gallob. 298. Krock. files. n. 1136. t. 35. Hall. belv. n. 348. Dalech. hist. 1293. Tabern. 92. f. 1—8.—major. Leers herb. n. 548. Fl. dan. t. 605. Blackw. t. 534.—rad. cava major. Baub. pin. 143. Raii hist. 975.—fl. purpurascens & albo. Baub. hist. 3. 204. f. 2.

F. cava. Mill. dict. n. 7. Curtis magaz. t. 232.

F. altera. Camer. epit. 891. Matth. 722.

Pseudo-Fumaria. Rivin. tetr. t. 72.

Radix cava. Dod. pempt. 326.—major. Clus. hist.

1. 271.—purpurea & alba. Ger. 931. f. 1, 2.

emac. 1090. f. 1, 2.—fl. albo & carneo. Park.

parad. 275. n. 1, 2. 279. f. 1. Mor. hist. 2. 261.

f. 3. t. 12. f. 6.

- Pistlochis*. *Fuchf. hist.* 91.
 β. *F. bulb. intermedia*. *Lin. spec. & succ.* β.
F. bulbosa. *Pollich. pal. n.* 662.
F. bulb. minor. *Tabern. hist.* 94.—*tuberosa minor*,
 rad. non cava. *Mor. hist.* 2. 261. *f.* 3. *t.* 12.
f. 8.
F. bulb., rad. non cava minor. *Baub. pin.* 144.
Radix cava minor. *Dod. pempt.* 327.
 γ. *F. bulb. solida*. *Lin. spec.* γ.—& *f.* *succ.* α.
Hall. belv. n. 349. *Solid-rooted Bulbous Fumitory*.
F. bulbosa. *Mill. dict. n.* 8.—*minor*. *Leers her-*
born. n. 549.—rad. non cava major. *Baub. pin.*
 144.—rad. solida, calcari & fol. cristato. *Baub.*
hist. 3. 205. *Raii hist.* 975.
F. solida. *Curtis magaz. t.* 231.
F. bulbosa β. *Krock. files. n.* 1137.
F. bulb. viridis. *Tabern. hist.* 94.
Radix cava viridi flore. *Lob. ic.* 760. *Baub. hist.*
 3. 205. *f.* 1. *Mor. f.* 7.
Stem simple, bractes the length of the flowers.
 6. *Fumaria sempervirens*. *Glaucous Fumitory*.
Lin. spec. 984. *Reich.* 379. *hort. upf.* 207. *cliff.*
 352. *Mill. fig. t.* 78. (*Capnoides*.)
F. glauca. *Curtis magaz. t.* 179.
F. filiquosa sempervirens. *Corn. canad. t.* 57. *Mor.*
hist. 2. 259. *f.* 3. *t.* 12. *f.* 1.
Siliques linear, panicled, stem erect.
 7. *Fumaria lutea*. *Yellow Fumitory*.
Lin. syst. 637. *Reich.* 379. *mant.* 258. *Mill.*
illustr. *Baub. pin.* 143. *Ger.* 928. 4. *emac.*
 1088. 4.—*montana*. *Dalech. hist.* 1294. *Park.*
theat. 287. 4. *Mor. hist. t.* 12. *f.* 4.
F. Capnoides. *Mill. dict. n.* 4. *fig. t.* 136. *f.* 1.
F. tingitana. *Pluk. alm. t.* 90. *f.* 2.
F. quæ Split dicitur. *Baub. hist.* 3. 203. *f.* 2. *Raii*
hist. 974.
Capnoides lutea. *Gærtn. fruct.* 2. 163.
Pseudo-Fumaria flore luteo. *Riv. tetr. t.* 74.
Siliques cylindric; stems diffused, angles obtuse.
 [8. *Fumaria sibirica*. *Siberian Fumitory*.
Lin. syst. 637. *suppl.* 314.
F. tenuifolia, flor. luteis. *Amm. rar.* 173. *t.* 20.
Siliques oval, stems patulous, leaflets oblong.
 9. *Fumaria Capnoides*. *White-flowered Fumitory*.
Lin. spec. 984. *Reich.* 379. *Hall. belv. n.* 347.
Scop. carn. n. 865. *Herm. lugdb.*
F. alba. *Mill. dict. n.* 3.
Siliques linear, four-cornered, stems diffused, acute-
angled.
 10. *Fumaria enneaphylla*.
Lin. spec. 984. *Reich.* 380. *Bocc. mus.* 2. 83.
t. 73. *Raii suppl.* 475. *Barrel. ic.* 42.
Leaves triternate, leaflets cordate.
 11. *Fumaria officinalis*. *Common Fumitory*.
Lin. spec. 984. *Reich.* 380. *mat. med.* 168. *hort.*
cliff. 252. *f.* *succ.* n. 630. *Huds. angl.* 309.
With. 751. *Curtis lond.* 2. 52. *Lightf. scot.*
 379. *Hall. belv. n.* 346. *Neck. gallob.* 298.
Scop. carn. n. 866. *Pollich. pal. n.* 663. *Krock.*
files. n. 1139. *Allion. pedem. n.* 1085. *Blackw.*
t. 237. *Mill. fig. t.* 136. *f.* 2. *Woodv. med.*
bot. 241. *t.* 88. *Villars dauph.* 3. 386.
Fumaria. *Fuchf. hist.* 338. *Camer. epit.* 890. *Riv.*
tetr. t. 1. *Matth.* 1158.—*officinarum* & *Diof-*
coridis. *Baub. pin.* 143.—*vulgaris*. *Baub. hist.*
 3. 201. *Park. theat.* 287. 1. *Raii hist.* 405. *syn.*
 284.—*purpurea*. *Ger.* 927. 1. *emac.* 1088. 1.—
latifolia. *Mor. hist. t.* 12. *f.* 9.
Capnos. *Lob. ic.* 1. 757. 1.
Pericarps one-seeded, racemed, stem diffuse.
 12. *Fumaria capreolata*. *Ramping Fumitory*.
Lin. spec. 985. *syst.* 637. *Reich.* 380. *Gærtn.*
fruct. 2. 162. *Huds.* 309. 1. β. *With.* 752.
Krock. files. n. 1140. *Lightf. scot.* 380. *Relb.*
cant. n. 510. β. *Ger. prov.* 293. 2. *var.* 2.
Fl. dan. 340.
F. viticulis & capreolis plantis vicinis adhærens.
Baub. pin. 143.
F. major scandens, flore pallidiore. *Raii hist.* 405.
syn. 204.
Pericarps one-seeded, racemed, leaves climbing, sub-
cirrrose.

13. *Fumaria spicata*. *Narrow-leaved Fumitory*.
Lin. spec. 985. *syst.* 637. *Reich.* 380. *Sauv.*
monsp. 263. *Villars dauph.* 3. 387.
F. minor tenuifolia. *Mor. hist. f.* 11.—*caulibus pro-*
cumbentibus & caducis. *Baub. pin.* 143. 3.
 β. *F. fol. tenuissimis, flor. albis, circa Monspelium*.
Baub. pin. 143. 1. *Segu. veron.* 2. 111.
F. tenuifolia erecta hispanica purpurea. *Barr. ic.*
 41.
F. minor tenuif. præcox, semine lini. *Mor. hist.*
 2. 262. *f.* 3. *t.* 12. *f.* 13.
F. minor f. tenuif. furrecta. *Baub. hist.* 3. 203.
f. 1. *Raii hist.* 406. *Park.*
Capnos tenuifolia. *Clus. hist.* 2. 208. *Lob.*
Pericarps one-seeded, spiked, stem erect, leaflets fili-
form.
 14. *Fumaria claviculata*. *Climbing Fumitory*.
Lin. spec. 985. *syst.* 637. *Reich.* 381. *hort. cliff.*
 351. *Huds. angl.* 309. *With.* 753. *Lightf.*
scot. 380. *Fl. dan. t.* 340. *Baub. pin.* 143. 6.
Mor. f. 3. *t.* 12. *f.* 3. *Sowerby engl. bot. t.*
 103.
F. alba latifolia. *Park. theat.* 288. 6. *Raii hist.*
 974. *syn.* 335. *Ger.* 929. *f.* 5, 6.—*claviculata*.
Ger. emac. 1088. 2.
F. cum capreolis. *Baub. hist.* 3. 204. *f.* 1. *Mor.*
hist. t. 12. *f.* 3.
Siliques linear, leaves tendril-bearing.
 15. *Fumaria vesicaria*. *Bladdered Fumitory*.
Lin. spec. 985. *Reich.* 381. *hort. upf.* 207. *cliff.*
 351. *Pluk. alm. t.* 335. *f.* 3.
Cysticapnos africana. *Gærtn. fruct.* 2. 161.—*scan-*
dens. *Boerb. lugdb.* 1. *t.* 310.
Siliques globular, acute, inflated, leaves cirrhose.
 DESCRIPTIONS, &c.

[The leaves are many-parted, sometimes biter-nate, and the end of the rachis cirrhose. The flowers are in terminating spikes*.]

In their flower and fruit they have a great affinity with papilionaceous plants, although that affinity is not very obvious at first sight: and some parts of the structure are peculiar to the genus. Thus the posterior part of the corolla terminates in a nectary like that of the Violet. But the part in which Fumitory differs most from the papilionaceous flowers is the calyx, which consists of two small lateral leaves, more like stipules. The seed-vessel in some species has not much resemblance to those of the papilionaceous tribe; and hence Ray divided the genus*.]

1. Root scaly, the size of a large hazel nut. Flower-stalk eight or nine inches high. [Root-leaves in pairs, triternate, gashed, smooth, slender; with red petioles. Scape simple, round, length of the leaf, rufous. Raceme terminating, simple, the flowers (four or five) pendulous; pedicels one-flowered, with a pair of bractes to each, opposite, ovate, sharp, red, small, approximating to the flower: calyx ovate, pressed close, small, white: corolla white; border yellow, two-lipped; lips equal, concave, reflex, ovate, entire; throat closed, yellow, the sides widened at the edge, and moistened with nectareous juice: spurs equal, distant, somewhat compressed, nearly the length of the corolla: filaments on each side three distinct. Native of Virginia and Canada. Perennial*. It flowers in June and July; and was cultivated by Mr. Miller in 1759*.]

2. This is a fine plant, with very large, handsome flowers. It has the air of *F. bulbosa*, but is bigger in all its parts. The branches proceed from the axils of the leaves, and are but few. Stem erect. The raceme has no bractes. The corolla is the size of the last joint of the thumb, divided at the back of it into two equal rounded lobes. Native of Siberia*.

3. Annual.—Native of North America. It flowers from June to September. Introduced about 1778, by John Fothergill, M. D.*

* Jussieu.
 * Hort. kew.

* Curtis.
 * Linn. spec.

* Linn. mant.
 * Hort. kew.

4. Perennial. Very like the next species, but much larger. Root-leaves seven to nine, a span in length, bipinnate. Scapes one or two, oblique, five-cornered. Stem-leaves four, sessile, compound. Raceme very blunt; the flowers directed one way. Bractes ovate-lanceolate, entire. Flowers double the size of those in *F. bulbosa*, white, with a yellow border, smelling like Cowslips; the lips neither emarginate nor ferrate; throat black at the tip; calyx minute, toothed^z. Capsule when ripe herbaceous, thin, friable. Seed large, lenticular-beaked, very smooth, dark and shining^h. Native of Siberia.—It flowers in may. Introduced 1783, by Mr. John Græferⁱ.

5. These plants are united specifically by a fleshy, simple root. In variety β . the plants of the first year produce entire bractes, which in the following ones become cloven. Buds radical, two, three-valved. Stem simple, somewhat angular, with a single branch; structure of the leaves decomposed; raceme terminating, solitary, with bractes between the flowers. Calyx and corolla, &c. very small^k.

α and β , according to Reichard, are two distinct species, not altered by culture. γ . belongs to α , the roots being indifferently hollow or solid: α also varies with a white flower.

Linneus informs us that the three varieties are all natives of Sweden, but in different provinces; the first in Scania, both with a red and a white flower; the second in most of the woods of Upland; and the third on the coasts of Roslag and Finland.—They may be thus distinguished— α has a hollow root, and entire bractes; β a solid root, and entire bractes; γ a solid root, and gashed bractes: the hollow and solid-rooted Fumitory never are seen together, for they affect different soils; the former flowers fourteen days later, and the latter has entire bractes the first year. But there are many characteristic and essential marks common to them all, which are hardly to be found in the other species of this genus. Thus the calyx in these is scarcely visible to the naked eye: the root is a bulb, fibrous at bottom, gemmiparous at top: the stem is simple without branches, except that a single one sometimes comes out from the uppermost scale of the bud: there are commonly two or three leaves on the stem: there is a gemmeous membrane from the root, inclosing the plant before it unfolds: and lastly, a broad leafy bracte under each flower^l.

Others make only two varieties, or perhaps species, supposing that α and β are one and the same: the root at first nearly globular, solid, and putting forth fibres from every side; becoming afterwards hemispherical, and hollow underneath; only two leaves on the stem; bractes quite entire, shorter than the flowers; corollas either white or purple.— γ . The other has the bulb of the root smaller, always solid, and obovate, putting forth fibres only at the base; leaves more numerous, (four to six) usually more tender and narrower; bractes cloven like parallel fingers, the length of the flowers; corollas purple, smaller than the others; and the whole plant lower. Transplanted into a garden with the former, it did not in ten years acquire any hollowiness in the root, nor did the cloven bractes ever become entire^m.—According to Curtis, the solid-rooted Fumitory rarely exceeds three or four inches in height, and produces its spike of purple flowers in april; it does not vary much in colour. The hollow-rooted Fumitory has a much larger root, hollow like a shell; the plant grows to twice the size of the other, and bears a foliage and flowers proportionably larger; the bractes, which in that assume a kind of fingered appearance, in this are entire, or but slightly indented; and it flowers about three weeks earlier. There are three principal varieties of it in point of colour—white, bluish-coloured and purple.

[As this species is found in most parts of Europe from Sweden to Italy, Linneus remarks, as a singularity, that it does not grow wild in England. I gathered the hollow-rooted variety in Savoy on the 15th of march, 1779, in flower. In our gardens they appear early in april. Cultivated in 1596, by Gerardeⁿ.]

Mr. Miller says that the solid-rooted Bulbous Fumitory is common in many of our old gardens, but that the hollow-rooted one is now rarely to be found in them. He gives them as distinct species.

6. Annual. Stem upright, a foot and half high, round, and very smooth, sending out several branches at top. Leaves smooth, branching, pale, divided like the common sort, but the leaflets larger and more obtuse. Flowers in loose panicles from the sides of the stem, and at the extremities of the branches, of a pale purple colour, with yellow chaps or lips. Pods taper, narrow, an inch and half long, containing many small black shining seeds. It flowers during summer.

[Native of North America. Cultivated in 1683, by Mr. James Sutherland^o.

7. This is very like the ninth species, but it is perennial. The spur of the corolla is rounded, and shorter by half than the tube. The racemes have no bractes^p.]

Mr. Miller adds, that the stalks of this have blunt angles, whereas those of the ninth are acute; that they are of a purplish colour; and that the flowers grow in a looser panicle, on longer pedicels.

[The root strikes deep into the ground. Stems many, succulent, diffused, about six inches high. Leaves on long, branching petioles, composed of many irregular leaflets, trifid at the top. Peduncles axillary, naked, longer than the leaves, supporting eight or nine flowers, of a bright yellow colour, in a loose spike. The leaves continue green all the year, and the flowers in succession from april to october; so that this species deserves a place in every garden. It is peculiarly proper for rock-work, old walls and buildings, in which the seeds often lodge of themselves, being thrown to a considerable distance by the elasticity of the pods^q.

Native of Barbary. Cultivated 1596, by Gerarde^r.

8. Annual. Stems herbaceous, branching, five-cornered, brittle. Leaves alternate, super-decomposed, with oblong leaflets. Flowers yellow. Pods oval, compressed, smooth, somewhat elastic. Native of Siberia^s.

9. Annual. Stem four-cornered at the base. Leaves superdecomposed, the terminating leaflets larger, and semitrifid; the middle segment lobed; petioles three-cornered. Racemes naked. Pedicels shorter by half than the corollas, blackish at the tip. Corollas whitish, with the wings yellow at the tip, and drawn to a point: filaments two, with two anthers only on each, close to the stigma when in full perfection, and full of orange-coloured pollen: style cylindric, slender, with a bent stigma^t.

There is a succession of the flowers from may to october: and this, as well as the seventh, is proper for walls, old buildings and rock-work.—Native of the South of Europe. Cultivated in 1596, by Gerarde^u.]

10. This has weak trailing stems, which are much divided, and leaflets divided into three parts, each of which has three heart-shaped lobes: the flowers are produced in small loose panicles from the side of the stalks; they are of a greenish white, and appear most of the summer months.

Native of Spain and Italy, upon old walls and in rocky places.

11. [Root annual. Stems from nine to seventeen inches in height, spreading, angular, enlarged at the joints, branched, smooth, tender, and somewhat

^z Linn. syst. ^h Gartner. ⁱ Hort. kew.
^k Linn. spec. ^l Linn. succ.
^m Leers, Krock, Haller.

ⁿ Hort. kew. ^o Ibid. ^p Linn. mant. & syst.
^q Mill. fig. ^r Hort. kew. ^s Linn. suppl.
^t Scopoli. ^u Hort. kew.

flexuose. *Leaves* alternate, petioled, glaucous, smooth, somewhat fleshy, superdecompound, the last division bifid or trifid, the extreme segments lanceolate. *Flowers* alternate, in very long spikes, on very short pedicels, under each of which is a lanceolate, membranaceous bracte, purple at top. The calyx has little teeth about the edges. Corolla reddish, tipped with deep purple, sometimes pale purple or white^a.

It is a common weed in corn fields, gardens, and on ditch banks; flowering from april to august and even later.

Kine and sheep eat it: to the latter it is accounted salubrious.

The leaves are succulent, saline and bitter. The expressed juice in doses of two or three ounces, with whey is useful in hypochondriacal, scorbutic and cachectic habits. It corrects acidity, and strengthens the tone of the stomach. Hoffman prefers it to all other medicines as a sweetener of the blood. There is no doubt of its utility in obstructions of the viscera, and the diseases arising from them. The celebrated Boerhaave frequently prescribed it in the black jaundice and bilious cholics. An infusion of the leaves is used as a cosmetic to remove freckles, and clear the skin; and Dr. Cullen has experienced its good effects in many cutaneous disorders, which may be called *Lepra*⁷.

12. This seems to be nothing more than a variety of the foregoing. Mr. Hudson can perceive no difference except in the colour of the flowers, which in this is white with a purple tip. It climbs, not by tendrils, but by the bending or twisting of the petioles, but Louis Gerard attributes this wholly to its situation in hedges or among bushes. Dr. Stokes however has observed the stem sometimes trailing, and interweaving its branches among the grass, very much branched, sometimes three feet long, the blossoms pale red. The stems are longer and weaker; the leaves more distant, and not so finely divided, the extreme divisions broader and blunter than the foregoing: the spikes of flowers are on longer peduncles, but with fewer flowers on a spike². All these differences may also be owing to situation.

Krocker has described this plant very minutely, and says particularly that the stems are remarkably weak, and the ends of the branches finer than a bristle, that the case is the same with the petioles and rachis of the leaves, and peduncles of the flowers; that these fine extremities twist about neighbouring shrubs, grass or other plants, and keep such fast hold as to be separated with difficulty; but that real tendrils are seldom or ever to be found, or if there be any such, they are very short, weak and useless. Considering that the substance of the whole plant is more tender than in the foregoing; the stem more diffused, twisting at the extremities, and never standing erect of itself; the racemes almost always lateral and very short; the flowers very small, whitish, and green only at the tip; the partial peduncles thicker than the common ones; the leaves on longer petioles, larger and more tender, with their rachis or common petiole twisted and doing the office of tendrils, and even sometimes terminating in real tendrils; he is rather inclined to think that this is a distinct species. It differs from *F. claviculata* in the absence of genuine tendrils; and in having three-lobed leaves, the lobes bifid or trifid; whereas those of *F. claviculata* are pinnate, the pinnae entire, and smaller than in this species.

Native of Provence, Silesia, and Britain. Linneus remarks, as a singularity, that this does not occur in Sweden, where the foregoing is very common, not only in corn fields, but among bushes.]

13. Annual. The stalks more erect than in the common sort; the leaves are very finely divided, and the flowers grow in a loose spike; they are of a deep red colour, and appear about the same time.

[The flowers grow very close together in the spike; and the leaves are glaucous^a.

This plant is minutely described by Ray, who was well acquainted with it in its place of natural growth.—Root slender, simple, white, straight, with few fibres, bitter and hot. Stems many, the middle one larger and firmer than the rest, about nine inches in height, streaked, hollow. Spikes of flowers short and thick, opening one after the other from the bottom upwards, beautiful with a variety of colours, light and dark purple, greenish yellow, white and flesh-colour. Seeds flattened like those of flax, smooth and shining. The leaves are smaller than in the other species, like Carnomile: those that proceed from the root are on longer petioles, but the segments are shorter; those on the stem have shorter petioles but longer segments. Both stems and leaves are covered with a glaucous bloom. There is little or no bitterness in the leaves.

Linneus suspects that this may be a hybridous plant; and is of opinion, that whoever shall determine this and the following to be varieties of the 11th or common Fumitory can hardly err; the fruit indicating that they are one and the same.

Native of Spain, Portugal, Italy, and the South of France.—Cultivated here in 1714^b. It flowers with us in july and august. Ray says it flowers in summer, whereas Linneus asserts that the flowers are vernal.

14. Root annual. Stems three-cornered, slender, and unable to support themselves, purplish at the base. Leaves glaucous, paler beneath, pinnate, terminated by branched tendrils; leaflets two to five, inversely ovate, ovate-lanceolate or lanceolate, ending in a sharp flexible point, alternate, petioled. Flowers few (about five, seldom more than two coming to perfection) in short terminating spikes, corolla pale, greenish white or straw coloured. Seeds generally three, in oblong, pointed, smooth pods^c.

Native of Denmark and Britain, in woods and moist hedges, boggy and rocky places in a sandy soil, on the banks of lakes and rivers, and on the thatch of cottages. As on Blackheath and about Charlton and Greenwich. At Snarésbrook near Woodford, Essex. On the banks of the Trent near Ouseley in Staffordshire. In the hedges between Bala in Merionethshire and Pimble-mear. Above Great Malvern tower. About Birmingham. Rocks of Stonehall, near Rawdon, seven miles from Leeds. Thorpe near Norwich. In the quarries at Inner-Keith, in Scotland. Near Whitwick in Leicestershire. Kendal in Westmoreland. Flowering from the end of may to the end of july.]

15. This is an annual plant, with trailing stalks, which are two or three feet long, dividing into many smaller ones, with small branching leaves, like those of common Fumitory, but ending in tendrils. Flowers in loose panicles, from the side of the stalks, of a whitish yellow colour.

[The terminating leaflets are protracted into tendrils. Peduncles opposite to the leaves, bearing one to four flowers. Siliques ovate, large, inflated, pendulous—or rather, lanceolate, covered with a hollow, berried pericarp^d.

It is thus, more accurately, described by Gærtner: Pericarp double, composed of the rind or outer involucre, arising from the germ itself, and of the capsule within the involucre. Involucre large, somewhat leathery, inflated, globular, acuminate at the end, two-valved; the valves cohering with the capsule by means of a thready cellular substance. Capsule placed in the axis of the involucre, oblong, acuminate to both ends, a little flattened, membranaceous in the middle, very thin, diaphanous, but at each side thickened, suberous, opaque, one-celled, valveless, bursting irregularly by the involucre when it opens. Seeds numerous rounded-kidney-form, towards the navel slightly flattened, dark-coloured,

^a Woodw. Mfs. and Withering.

⁷ Withering, Lightfoot, Hallei, Woodw. Mfs.

² Woodw. Mfs.

^a Linn.

^b Hort. kew.

^c Wither. Lightf. Woodw. Mfs. and Engl. bot.

^d Linn. spec.

very smooth and shining, fixed to the thickened edges of the capsule.

Native of the Cape of Good Hope. Cultivated in the Chelsea garden, in 1696. It flowers in July^d.

PROPAGATION AND CULTURE.

1. This is propagated by offsets from the root; it loves a shady situation and a light soil; the best time to transplant the roots is in autumn, when the leaves are decayed, for it shoots pretty early in the spring, therefore it would not be safe to remove them at that season.

4, 5. Are propagated by offsets, as other bulbous-rooted flowers; these are very pretty ornaments to borders in a small flower-garden. They are extremely hardy, but do not increase very fast, seldom producing seeds with us; and their bulbs do not multiply very much, especially if they are often transplanted. They love a light sandy soil, and should be suffered to remain three years undisturbed, in which time they will produce several offsets. The best season for transplanting them is from May to August, when the leaves begin to die off; for if they are taken up when the leaves are fresh, it will greatly weaken their roots.

6, 7, 8, 9, 10, 12, 13, 14. If the seeds of these are permitted to scatter, the plants will come up without any trouble, and require no other care but to thin them where they are too close, and to keep them clean from weeds.

These thrive best on old walls and buildings and on rocks; they scatter their seeds from their elastic pods, and require no care in the cultivation.

11. Is a common weed in gardens.

15. This is propagated by seeds, which should be sown upon a moderate hot-bed in the spring; and when the plants are fit to remove, they must be each planted in a small pot filled with light earth, and plunged again into the hot-bed, where they must be shaded from the sun till they have taken new root; after which they should have a large share of air admitted to them at all times in mild weather, to prevent their drawing up weak; and as soon as the season is favourable, they should be inured to bear the open air, to which they may be removed the beginning of June, when they may be shaken out of the pots, preserving all the earth to their roots, and planted in a warm border, where their stalks should be supported with sticks to prevent their trailing on the ground; and in July the plants will flower, and continue a succession of flowers till the frost destroys the plants; the seeds ripen in autumn.

[FUMARIA BULBOSA. See *Adoxa*.

FUMITORY. See *Fumaria*.

—, Bulbous. See *Adoxa*.

FUNARIA. A genus of Moss. *Schreb. gen. n.* 1650.

The same with *Koelreutera* of Hedwig, *fund.* 2. 95.

It contains some of Linneus's Mniums.

FUNGI. (*Fungus* from *σπογγος*, on account of its spongy nature.) *Mushrooms*.—Cryptogamia Fungi, the last order in the last class of Linneus's system, and kept together as one class under every arrangement.

We know so little yet about the fructification of Fungusses, that we are obliged to take the characters from the general external form. It is evident, that they are vegetables, and produce seed, by which they have been propagated, and they seem to belong to the class Monoecia. Hedwig has made some important discoveries respecting the fructification of Fungus, by the use of high magnifiers; and thinks he has discovered stamens in the threads which appear on the edge of the cap or pileus, on the membrane or volva, or on the stem itself. The seeds are a dark powder in the gills of the Agarics; in the Boleti the seeds are within the membrane that lines the tubes; in *Peziza cyathoides* they appear to be inclosed in a sort of pod. The black powder in the *Lycoperdon* and *Mucor* was taken for animalcules by Baron Munckhausen, and thus the Fungi

^d Hort. kew.

were on the verge of migrating into the class of Zoophytes. According to the Baron, these globules, which appear black, are semitransparent, and contain a black particle. If they be mixed with water and kept in a warm place, they presently swell, and are changed into ovate animalcules, that in a few days unite and form a mass of a pretty firm texture, which is the Fungus.

Mr. Ellis however has shewn satisfactorily that the motion of these globules was occasioned by a number of very minute animalcules feeding upon them, and these being much smaller than the globules, are difficult to detect, on which account the Baron seems to have overlooked them^a.

Many of the Fungus tribe are much esteemed in foreign countries as a luxurious food, on account of their high flavour. We in England almost confine ourselves to the *Agaricus campestris*, which we call exclusively Mushroom, the Morell, and the Truffle: which are particularly treated of, under the articles *AGARICUS*, *PHALLUS*, and *LYCOPERDON*. In Russia we are told that they are eaten almost indiscriminately, salted and thus kept for winter use. That many have suffered disease, and some even death from eating voraciously or incautiously of Fungusses is certain; it is doubtful however whether many of them be really poisonous, in the strict and proper sense of the word^b. A great variety of insects feed on the different species, particularly the *larvæ* or maggots, of many of the *Musca* or Fly genus^c. Some Fungusses have been found of considerable use in stopping external hæmorrhages; and the acrimonious qualities of others will probably at some future period be turned to good account^d.

For farther particulars of this tribe, see *Agaricus*, *Boletus*, *Clathrus*, *Clavaria*, *Helvella*, *Hydnum*, *Lycoperdon*, *Mucor*, *Otospora*, *Peziza*, *Phallus*, *Sphæria*.

FUNGI esculenti. See *Phallus*.

— parvi. See *Lichen byssoides*.

FUNGILLI. See *Lichen ericetorum*.

FUNGOIDASTER. See *Helvella*.

FUNGOIDES. See *Agaricus*, *Clavaria*, *Helvella*, *Peziza*.

FUNIS crepitans. See *Cissus*.

— murænarum. See *Melaetoma*.

— musarius. See *Uvaria*.

— quadrangularis. See *Menispermum*.

— urens. See *Tragia*.

FU-RAN. See *Epidendrum*.

FUSANUS. (From Fufain, which is the French name for *Euonymus* or *Spindle-tree*.)

Class. 23. 1. Polygamia Monoecia.

Nat. order of *Elaagni*, Jussieu 75.

GENERIC CHARACTER.

* *Hermaphrodite*.

CAL. Perianth one-leafed, turbinate, half-five-cleft (four-cleft, *Berg.*): clefts ovate-acute, from flat spreading, with the tips gibbous-uncinate, somewhat concave.

COR. none.

STAM. Filaments four, linear, grooved in the middle; a little longer than the germ, inserted into the calyx near it, and occupying the sinus of it. Anthers roundish, compressed, four-lobed, erect.

PIST. Germ large, turbinate, almost inferior, wide at top, from flat somewhat concave, striated, quadrangular, with four hollowed sinuses, each on each side of the germ solitary. Style thick, very short; subquadrangular. Stigmas four, obtuse cruciform, small.

PER. Drupe.

* *Male*.

CAL. &c. as in the hermaphrodite, but the fruit abortive.

ESSENTIAL CHARACTER.

HERM. Cal. five-cleft. Cor. none. Stam. four. Germ inferior. Stigmas four. Drupe.

MALE. Cal. &c. of the former. Fruit abortive.

^a Wither. arr. 3. 31. to 34. *Philos. trans.* 51. 138. *Gentl. mag.* for 1773. p. 316. Hedwig.

^b Withering.

^c Curtis.

^d Withering.

SPECIES.

1. *Fufanus compressus*. *Flat-stalked Fufanus*.
Linn. syst. ed. 13. 765. Reich. 4. 330. Ait. hort. kew. 3. 433.
Thesium Colpoon. Linn. suppl. 161. syst. ed. 14. 250.
Colpoon compressum. Berg. cap. 38. t. 1. f. 1.

DESCRIPTION, &c.

This is a tree, with compressed and ancipital branches. Leaves opposite, obovate, blunt with a point, flat, quite entire, smooth, on short petioles. Racemes from the axils of the branches, erect, compressed, scarcely longer than the leaves. The number of parts in the flower four or five*. The fruitful tree has a three-leaved involucre at the base of the germ with five glands†.

According to Jussieu, it is a glaucous shrub, with opposite branches. The leaves are subopposite, entire, and scarcely nerved. The flowers small, in terminating panicles, some of them five-cleft, and mostly males.

The younger Linneus sees no necessity for separating it from the *Thesiums*‡. Jussieu doubts whether it may not be more nearly allied to the *Rhamni*.

Native of the Cape of Good Hope. Introduced in 1766, by Mr. Francis Masson^h.

PROPAGATION AND CULTURE.

Increased by cuttings, planted early in the summer in a good loamy earth, in pots, set in a glass-case or hot-bed, shaded and watered gently till they have struck root.]

FURZE. See *Ulex*.

[FUSTICK WOOD. See *Morus tinctoria*.]

G.

[**GÆRTNERA**. (In memory of Joseph Gärtner, M. D. F. R. S. Acad. Imp. Petrop. Memb. author of a most excellent work on the fruits and seeds of plants. *Stutg. 1788. & Tub. 1791. qu.*)

Lin. gen. Schreb. n. 735. — Hiptage. Gärtner. introd. 129. fruct. 2. t. 116. Banisteria sp. Sonnerat. it. 2. t. 135.

Class. 10. 1. Decandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, five-parted, permanent: *divisions* oblong, obtuse, spreading, nearly equal.

COR. *Petals* five, roundish, large, flat, spreading, torn and ciliate on the edge, nearly equal, with very short claws.

STAM. *Filaments* ten, filiform, very slightly coalescent at the base; nine slender, erectish, shorter than the corolla, the tenth thicker, the length of the petal, bent in at top. *Anthers* parallel-piped, nine equal small, the tenth on the longer filament a little larger.

PIST. *Germ* superior, three-toothed, small. *Style* filiform, lateral, bent in, the length of the greater stamen, permanent. *Stigma* sharp.

PER. *Capsule*? woody, having four wings, one-celled. *Wings* lanceolate, widening towards the tip, obtuse: one very large, upright; two smaller, patulous; the fourth very small, ascending.

SEED single, roundish.

ESSENTIAL CHARACTER.

Cal. five-parted, the leaflets having on the outside a single marginal gland. Cor. five-petalled, somewhat unequal, toothletted, furnished with very short claws. Seed-vessel nearly globose, with four wings.

* *Linn. suppl.* † *Syst.* ‡ *Suppl.* ^h *Hort. kew.*

SPECIES.

1. *Gærtnera racemosa*.
Vahl symb. 3. 58. Roxb. corom. 1. 19. t. 18.
Hiptage Madablota. Gärtner. fruct. 2. 169.
Banisteria benghalensis. Lin. syst. 247. fl. zeyl. n.
Banisteria tetraptera f. Madablota. Sonner. it. ind. 2. 238. t. 135. (very good).
Molina racemosa. Cavan. diff. 9. t. 263.
Sida-poa. Rheed. mal. 6. t. 59. Koenig.
Vedal-chitto of the Telingas.

DESCRIPTION, &c.

According to Rheede (in hort. malab.) four of the petals are white, and the fifth yellow. The seed vessel (Samara) is nearly globular, or inversely parabolical, leathery, thin, of a yellowish bay colour, marked on the side with the rudiment of the style; on the top it has a small triangular crest, and on the edge it has three very long leathery wings of an ovate-lanceolate shape, the middle one larger than the others. Seed kidney-form-globular, wrinkled, gibbous, ferruginous-reddish[†].

It is a large climbing woody shrub, flowering in the wet and cold season. It is cultivated all over the coast of Coromandel, on account of the beauty and fragrance of its flowers^k.

Native of the East Indies, in the Circar mountains. See *Banisteria benghalensis*, which is the same plant.

Gærtnera Pangati of Retzius, 6. p. 24. *Pongati*, hort. mal. 11. 24. is *Sphenoclea zeylanica* of Gärtner 1. 113. t. 24.

GAHNIA. (So named by Forster in honour of Henry Gahn, author of *Fundamenta Agrostographiæ*.)

Linn. gen. Schreb. n. 606. suppl. 31. nov. gen. gram. 34. Forst. gen. 26. Juss. 27.

Class. 6. 1. Hexandria Monogynia.

GENERIC CHARACTER.

CAL. *Glume* one-valved, ovate-lanceolate, convolute, two or five-flowered, Forster.—two-valved, one-flowered: *valves* lanceolate, channelled, acuminate; the outer longer, broader, L.

COR. *Glume* two-valved, shorter than the calyx: *valves* ovate-lanceolate, acuminate, concave; the outer a little longer, F.

Neetary two-valved, hyaline, involving the filaments: *outer valve* larger, ovate, concave, three-toothed at the tip, F. (wedge-shaped with a point, L.) half the length of the corolline glume; *inner* ovate, entire, very small.

STAM. *Filaments* six, capillary, short, after flowering elongated. *Anthers* linear, acuminate.

PIST. *Germ* oblong. *Style* filiform, erect, longer than the calyx, bifid. *Stigmas* in each division of the calyx two, capillary, curved back.

PER. none.

SEED single, oblong, F. subangular, smooth, surrounded by the elongated filaments, so as to be double the length of the corolline glume, permanent, L.

OBS. *Flowers* paniced. *Calycine glumes* in the lowest panicles frequently none. *Stamens* in the flowers seven and eight, but the uppermost flowers are always six-stamened, F.—Allied to *Schoenus*, L. So much, that the genus ought probably to be abolished.

ESSENTIAL CHARACTER.

Glume two-valved, irregular. *Neet.* two-valved, involving the filaments. *Stigma* dichotomous.

SPECIES.

1. *Gahnia procera*.
Lin. syst. 345. suppl. 211. Forst. in nov. act. upf. 3. 178. flor. austral. n. 158. nov. gen. 52. t. 26.
Panicles spiked several elongated, *florets* six-stamened.
2. *Gahnia schoenoides*.
Forst. flor. austral. n. 159.
Culms flexuose, *panicles* compound spiked rigid sub-solitary.

DESCRIPTIONS, &c.

1. Culm half a fathom in height, round, smooth, upright, reclining at top, the thickness of a pigeon's

[†] Gärtner.

^k Roxburgh.

quill. Leaves sword-shaped, longer than the culm, narrow, bristle-shaped at the tip, reclining, concave at the base, sheathing, rough at the edge with rows of minute spinules, alternate. Panicles in spikes, stiff, several, from the sheaths of the leaves, coming out in whorls at each joint of the culm, purple. Flowers purple, in involucre half an inch in length. Seeds brown. Number of stamens in the lower flowers seven or eight, but the upper ones have always six. The lower panicles are often destitute of involucre, and therefore bear naked flowers.

Native of New Zealand¹; found in Dusky bay april 11th, 1773.

2. Native of Otaheite^m. It may probably be a Schoenus.

GAIDAROTHYMO. See *Stachys spinosa*.

GAILLARDA. See *Galardia*.

GALACTIA. See *Clitoria*.]

GALANGA and GALANGALE. See *Kempferia* and *Maranta*.

GALANTHUS. (From γαλα & ανθος, milk and flower: so called from the milky whiteness of the corolla.)

Lin. gen. n. 401. Reich. 433. Schreb. 547.

Juss. 55.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Spathaceae*.—*Narcissi*, Juss.

GENERIC CHARACTER.

CAL. *Spathe* oblong, obtuse, compressed, gaping on the flat side, withering.

COR. *Petals* three, oblong, obtuse, concave, lax, parulous, equal.—*Nectary* cylindric, three-leaved, half the length of the petals; leaflets petal-shaped, parallel, emarginate, obtuse.

STAM. *Filaments* capillary, very short. *Antthers* oblong, acuminate, ending in a bristle, convergent.

PIST. *Germ* globular, inferior. *Style* filiform, longer than the stamens. *Stigma* simple.

PER. *Capsule* oval-globular, obtusely three-sided, three-celled, three-valved.

SEEDS several, globular.

ESSENTIAL CHARACTER.

Pet. three concave. *Nect.* of three small emarginate petals. *Stigma* simple.

SPECIES.

1. *Galanthus nivalis*.^{*} *Snow-drop*.

Lin. spec. 413. syst. 316. Reich. 2. 15. hort. cliff.

134. upf. 73. Hudf. angl. 140. With. 340.

Sowerby engl. bot. t. 19. Hall. herb. n. 1254.

Scop. carn. n. 391. Jacqu. austr. 4. t. 313.

Krock. fles. n. 497. Berg. phyt. 35.

Leucoium bulbosum trifolium minus.^{*} *Baub. pin.*

56.

L. bulb. minus triphyllon. *Baub. hist.* 2. 591. *Raii hist.* 1144.

L. bulb. præcox minus. *Clus. pann.* 181, 182.

Ger. 120. 1. *emac.* 147. *Park. par.* 109. *Mor.*

hist. f. 4. t. 9. f. 23.

L. bulb. triphyllum. *Dod. pempt.* 230.

DESCRIPTION, &c.

[The bulb of the Snowdrop is coated and truncate. Leaves yellowish at the base, callous at the tips. Scape half a foot or a span in height, ancipital, striated, involved at the base in a pair of leaves: sheath whitish, truncate, involving the leaves and scape. The peduncle usually comes out from the left cell of the spathe, is weak, and wrinkled below the germ. Flowers solitary, pendulous: petals milk-white. Nectary (or inner smaller petals) having on the outside above the middle a green heart-shaped spot, and on the inside six yellowish green lines. Anthers opening at the tip; filaments twice their length, and springing each from a cavity which has a rim round it. Capsule half an inch long. Seeds oblong, four to twelve in one cell, each adhering to the receptacle by its proper hookⁿ. It varies with double flowers.

Native of Switzerland, Austria, Silesia, England, &c. in meadows. Common in orchards, where it is probably a relique of cultivation. At the foot of Malvern hills, where no traces of buildings or

gardens are to be found. Near Cirencester^o, &c.: but it is very doubtful whether this; and several other bulbous plants were originally indigenous.—It flowers usually in february, hence its name in some places of *Fair Maids of February*. In the Rev. Gilbert White's Naturalist's Calendar the Snowdrop is marked to blow from jan. 10 to feb. 5; and this year 1796, whilst I am writing on jan. 25, it is in flower, but the season has been uniformly and remarkably mild, the thermometer from 51° to 55°.]

PROPAGATION AND CULTURE.

These flowers are valued for their early appearance in the spring, for they usually flower in february when the ground is often covered with snow. The single sort comes out the first, and though the flowers are but small, yet when they are in bunches, they make a very pretty appearance; therefore these roots should not be planted single, as is sometimes practised by way of edging to borders; for when they are so disposed, they make very little appearance. But when there are twenty or more roots growing in a close bunch, the flowers have a very good effect; and as these flowers thrive well under trees or hedges, they are very proper to plant on the sides of the wood-walks, and in wilderness-quarters; where, if they are suffered to remain undisturbed, the roots will multiply exceedingly. These may be taken up at the end of june, when the leaves decay, and may be kept out of the ground till the end of august, but they must not be removed oftener than every third year.

GALANTHUS. See *Leucoium*.

[GALARDIA. (Named first *Gaillardia*, by Mons. Fougereux de Bondaroy, from Mons. Gaillard of Charentonneau, who to the duties of the magistracy, adds, as a relaxation, the culture of plants, and the study of botany. Act. gall.)

Lin. gen. Schreb. n. 1323. Lamarck encycl. 2. 590.

Juss. 189.

Gaillardia. Fougereux de Bondaroy in act. gall. 1786.

t. 1, 2. *Calonnea*. *Buchoz.*

Class. 19. 2. Syngenesia Polygamia Frustranea.

Nat. order of *Corymbiferae*.

GENERIC CHARACTER.

CAL. Common of two rows of scales: scales linear, flat, acute, about twelve in each row: the outer longer, reflex; the inner erect.

COR. Compound radiate. Corollets hermaphrodite, numerous in the convex disk. Females about twelve, much longer, spreading, in the ray.

Proper in the hermaphrodites tubular-funnel-form, with a five-toothed border.—In the females ligulate, wider outwards, half-three-cleft.

STAM. to the hermaphrodites Filaments five, capillary, very short. Anther cylindric, tubular.

PIST. to the hermaphrodites Germ turbinate-angular. Style filiform, the length of the corollet. Stigmas two, spreading. Females Germ very small. Style none. Stigma none.

PER. none. Calyx unchanged.

SEEDS in the hermaphrodites solitary, angular, crowned with the five-leaved calycle: leaflets lanceolate, erect, awned. In the females none.

REC. convex, (flat, Juss.) chaffy. Chaffs bristle-shaped.

ESSENTIAL CHARACTER.

Recept. chaffy. Seed crowned with the five-leaved calycle (eight-chaffed, Juss.). Cal. of two rows of scales, almost equal.

SPECIES.

1. *Galardia alternifolia*.

Gmel. syst. 1259.

G. bicolor. Lamarck encycl. 2. 590.

Gaillardia pulchella. Foug. in act. gal. 1786, 1.

Calonnea pulcherrima. Buchoz. t. 126.

DESCRIPTION, &c.

Stem from a foot to eighteen inches high, straight, branched, slightly hispid, tinged with purple. Root-leaves oblong-spatulate, with large notches, a little rough to the touch, spread on the ground. Stem-leaves alternate, embracing, oblong, having a few

• Withering.

blunt

¹ Forster in act. upf.

^m Forster.

ⁿ Scopoli.

blunt indentures along the edge, bright green, and slightly villose; the upper ones are almost entire. Peduncles simple, naked, long, terminating, bearing one handsome flower, purple and yellow, two inches in diameter. Scales of the calyx ciliate or hispid at the base, the inner ones smallest. Hermaphrodite florets hispid on the outside. Receptacle slightly convex. Seeds turbinate, crowned with from five to eight sharp, scariose chaffs which form the egret.

This fine plant has been cultivated a few years in the royal garden at Paris.

M. Fougereux informs us that M. le comte d'Essales brought the seeds from Louisiana, and that the plants had produced seeds in the Paris garden in 1784 or thereabouts. It is an annual, and flowers in July and August, and continues to the end of October.

GALARIPS. See *Altamanda*.

GALAX. (Γαλαξ, Milk: which was probably the original noun, since it forms γαλαξος in the genitive.)

Lin. gen. n. 276. Reich. 296. Schreb. 382.

Juss. 420. Viticella. Mitch. 24.

Class. 5. 1. Pentandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth ten-leaved: outer leaflets alternate, shorter, lanceolate, reflex; inner longer, lanceolate, acute, upright.

COR. one-petalled, salver-shaped: tube cylindric, length of the calyx; border flat, five-cleft, segments obtuse.

STAM. Filaments short. Anthers roundish converging within the throat of the corolla.

PIST. Germ ovate, villose. Style filiform, semibifid, length of the stamens. Stigmas roundish.

PER. Capsule ovate, one-celled, two-valved, coloured, elastic.

SEEDS two, large, convex, ovate, callous, as it were single two-lobed.

ESSENTIAL CHARACTER.

Cal. ten-leaved. Cor. salver-shaped. Caps. one-celled, two-valved, elastic.

SPECIES.

1. *Galax aphylla*.

Lin. spec. 289. Reich. 1. 562. Gron. virg. 34.

Viticella. Mitch. gen. 24.

Anonymos f. Belvedere. Clayt. n. 4. Gron. virg. 25.

DESCRIPTION, &c.

This plant is a native of Virginia, as yet very rare and little known in Europe. Leaves all radical. Stem naked, simple, probably woody. Flowers in a loose, terminating spike.

GALAXIA. (Γαλαξιος κυκλφ, is the milky way; thus γαλαξιον φυτον, is a milky plant.)

Lin. gen. Schreb. n. 1103. Thunb. nov. gen. 50.

Cavan. diff. 6. 340. t. 189. Juss. 57.

Class. 16. 1. Monadelphia Triandria.

Nat. order of *Ensatae*. Irides, Juss.

GENERIC CHARACTER.

CAL. Spathe one-valved, membranaceous, converging. **COR.** one-petalled, superior. Tube filiform, long, erect, a little widened at top. Border six-parted: parts obovate, obtuse, spreading; the three outer ones having a nectareous pit.

STAM. Filaments three, united in a cylinder. Anthers ovate.

PIST. Germ inferior, obtusely triangular, smooth. Style filiform, a little longer than the stamens.

Stigmas three, filiform-many-parted, spreading.

PER. Capsule oblong-subcylindric, three-grooved, three-celled, three-valved.

SEEDS very many, globular, very small.

ESSENTIAL CHARACTER.

Spathe one-valved. Cor. one-petalled, six-cleft; tube capillary. Stigma many-parted.

SPECIES.

1. *Galaxia ovata*.

Lin. syst. 609. Thunb. nov. gen. 51. fig. prodr.

cap. 10. Cavan. diff. 6. 341. t. 189. f. 2.

Lamarck encycl. 591.

* Lamarck.

* Ibid.

Ixia Galaxia. Lin. suppl. 93.

Leaves ovate.

2. *Galaxia graminea*.

Lin. syst. 609. Thunb. nov. gen. 51. fig. prodr.

cap. 10. Cavan. diff. 6. 341. t. 189. f. 3.

Lamarck encycl. 592.

Ixia fugacissima. Lin. suppl. 94.

Leaves linear-filiform.

DESCRIPTIONS, &c.

1. Root filiform, fixed to an ovate netted comose bulb; there are usually several of these conglomerate. Stem none. Root-leaves heaped sheathing ovate obtuse slightly veined longitudinally flat smooth, the edge somewhat cartilaginous. The calyx is a very thin sheath. The corolla is variegated with yellow purple and violet. The capsule is smooth. It flowers from June to September.

2. Root as in the preceding. Leaves radical, in bundles, broader at the base, then linear, bristle-shaped at the tip, entire, channelled, smooth, very nearly an inch in length. Flowers radical, among the sheathing leaves, in bundles, sessile, with a long capillary tube, the length of the leaves. Corolla yellow, varying with a yellow tube and a violet-coloured border.

These are both natives of the Cape of Good Hope, where they were found by Thunberg.

Cavanilles adds a third species found by Commerfion in the straits of Magellan. Being doubtful whether it belongs to this genus, he names it *Galaxia obscura*.

GALBANUM. See *Bubon*.]

GALE. See *Liquidambar* and *Myrica*.

GALEGA. (An Italian word, q. herba Gallica.)

Lin. gen. n. 890. Reich. 963. Schreb. 1206.

Tourn. 222. Juss. 359. Indigo. Isnard. act.

gall. Cracca. Syst. nat.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceae* or *Leguminosae*.

GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, short, half-five-cleft; teeth subulate, nearly equal.

COR. Papilionaceous: banner large, ovate, reflex at the end and on the sides; wings oblong, having an appendage, and being almost the length of the banner; keel oblong, compressed, straight, towards the end gibbous below, sharp above.

STAM. Filaments diadelphous (simple and nine-cleft). Anthers oblong.

PIST. Germ slender, oblong. Style slender, shorter than the germ, ascending. Stigma a very small dot at the end.

PER. Legume very long, compressed, acuminate, scored with oblong streaks between the seeds.

SEEDS several, oblong-kidney-shaped.

ESSENTIAL CHARACTER.

Cal. with subulate teeth, nearly equal. Legume with oblique streaks, between the seeds.

SPECIES.

1. *Galega officinalis*. Official *Galega*, or *Goat's-Rue*.

Lin. spec. 1062. Reich. 3. 521. mat. med. 174.

hort. cliff. 362. upf. 208. Hall. herb. n. 394.

Mill. fig. 137.

Galega. Lob. ic. Ger. 1068. emac. 1252. Baub.

bist. 2. 342. Raii-bist. 911. Riv. tetr. t. 72.

vulgaris. Baub. pin. 352. Mor. bist. 2. 91. f. 2.

t. 7. f. 9. Park. theat. 417. Blackw. t. 92.

β. *G. africana*. Mill. dict. n. 2.

G. afr. flor. majoribus, filiquis crassioribus. Tournef.

inst. 399.

Legumes stiff upright; leaflets lanceolate, streaked, naked.

[2. *Galega cinerea*.

Lin. spec. 1062. Reich. 3. 522. amæn. 5. 403.

Brown. jam. 289. Vahl symb. 2. 84.

Legumes stiff spreading, racemes opposite to the leaves, pedicels solitary; leaflets villose underneath, stipules lanceolate.

3. *Galega littoralis*.

Lin. syst. 679. Reich. 3. 522.

* Cavanilles.

Vicia.

Vicia littoralis. *Jacqu. amer.* 206. t. 124. *piet.* 101. t. 192.

Legumes in racemes, the whole villose-tomentose.

4. *Galega virginiana*.

Lin. spec. 1062. *Reich.* 3. 522. *amæn.* 3. 18. *hort. cliff.* 498. *Gron. virg.* 111. (*Clitoria*). *mant. gen.* 210. (*Erebinthus*). *Pluk. alm.* t. 23. f. 2. (*Cicer*).

Legumes back-sickled compressed villose spiked, calyxes woolly, leaflets oval-oblong acuminate.

[5. *Galega villosa*.

Lin. spec. 1063. *Reich.* 3. 522. *Fl. zeyl.* n. 299. (*Cracca*). *Pluk. alm.* t. 59. f. 6. (*Securidaca*).

β. *Coronilla zeylanica*, &c. *Burm. zeyl.* 78. t. 33.

Legumes back-sickled villose pendulous racemed lateral, leaflets smooth lanceolate.

6. *Galega spinosa*.

Lin. syst. 679. *suppl.* 335.

Legumes solitary back-sickled compressed, stipules spinous, leaflets wedge-shaped hoary, stem diffused.

7. *Galega maxima*.

Lin. spec. 1063. *syst.* 679. *Reich.* 3. 523. *fl. zeyl.* n. 300. *amæn.* 3. 19. *Burm. zeyl.* 228. t. 108. f. 2. (*Vicia*).

Legumes stiff ascending smooth, stipules lanceolate, leaflets oblong smooth streaked.

8. *Galega grandiflora*. *Rose-coloured Galega*.

L'Herit. stirp. nov. 2. t. 44. *Ait. hort. kew.* 3. 70. *Vahl symb.* 2. 84.

Legumes spreading, stipules ovate-lanceolate, leaflets oblong almost naked awned.

9. *Galega pallens*. *Pale-coloured Galega*.

Ait. hort. kew. 3. 70.

Legumes stiff spreading ciliate, stipules awl-shaped, leaflets (nine to eleven) oblong sharp pubescent underneath.

10. *Galega piscatoria*. *Woolly Galega*.

Ait. hort. kew. 3. 71.

Legumes stiff ascending subvillose, stipules awl-shaped, leaflets (eleven to thirteen) oblong blunt somewhat hairy underneath, peduncles ancipital.

11. *Galega purpurea*. *Purple Galega*.

Lin. spec. 1063. *Reich.* 3. 523. *fl. zeyl.* n. 301. *amæn.* 3. 19. *Burm. zeyl.* 77. t. 33.

Legumes stiff ascending smooth racemed terminating, stipules awl-shaped, leaflets oblong smooth.

[12. *Galega caribæa*.

Lin. syst. 679. *Reich.* 3. 523. *Jacqu. amer.* 212. t. 125. *piet.* 101. t. 193.

Legumes stiff smooth pendulous racemed, leaflets smooth mucronate, stem shrubby.

13. *Galega coerulea*.

Lin. syst. 679. *suppl.* 335.

Racemes terminating many-flowered contracted, leaflets (eight to ten pairs) elliptic, stem scabrous.

14. *Galega tinctoria*.

Lin. spec. 1063. *Reich.* 3. 523. *fl. zeyl.* n. 302. *amæn.* 3. 19.

Spikes lateral peduncled, legumes stiff pendulous, leaflets emarginate villose underneath.

15. *Galega fenticosa*.

Lin. spec. 1063. *Reich.* 3. 523. *fl. zeyl.* n. 303. *amæn.* 3. 19.

Legumes in pairs lateral smooth, leaflets emarginate silky underneath; stem shrubby.

16. *Galega pulchella*.

Scop. fl. insubr. 3. t. 21. *Vahl symb.* 2. 85.

G. stricta. *Ait. hort. kew.* 3. 70.

Legumes straight villose; pendulous, racemed; stipules awl-shaped; standards above and leaves underneath villose.

17. *Galega frutescens*.

Mill. dict. n. 3. *Houft. Mfs.*

Leaflets ovate, flowers panicled axillary, stem shrubby.

[18. *Galega tomentosa*.

Vahl symb. 2. 84.

Lathyrus tomentosus. *Forfk. descr.* 135.

Legumes stiff ascending villose racemed opposite to the leaves, pedicels in threes, leaflets silky underneath, stipules awl-shaped.

19. *Galega toxicaria*.

Swartz prodr. 108.

G. frutescens, fol. sericeis. *Plum. ic.* 126. t. 235.

Cytisus 2. *Brown. jam.* 296.

Spikes terminating peduncled, legumes cylindric pedicelled spreading, stem and leaflets hoary-tomentose.

DESCRIPTIONS, &c.

1. Root perennial, composed of many strong fibres, which are frequently jointed. Stems channelled, hollow, from two to three, or even five feet in height. Leaves unequally pinnate, composed of five or seven (Haller says nine or ten) pairs of smooth, entire leaflets. Flowers terminating, in loose spikes; they are of a pale blue colour, appear in June, and are succeeded by taper pods, about an inch and half in length, and ripening towards the end of August.

There is a variety with white, and another with variegated flowers.

β. The African plant has larger leaves, composed of eight or ten pairs of leaflets, broader and blunter; the flowers are larger, the spikes longer, and the seed-pods much thicker.

Goat's-Rue is accounted cordial, sudorific and alexipharmic. Mr. Boyle celebrates its virtues in pestilential and malignant diseases.

Native of Spain, Italy, Hungary, and Africa. Cultivated by Gerard in 1596^a. He names it *Italian Fitch* and *Goat's-Rue*.

By some mistake, this plant is set down by Parkinson, as having been found wild near Linton in Cambridgeshire, where it was certainly never seen growing wild by any person.

2. This is a small herbaceous plant, somewhat of an ash colour, seldom growing above eleven or twelve inches in height. It is common among the bushes in all the Savannas about Kingston in Jamaica^b.

3. Stems round, branched, villose, procumbent unless it be supported by neighbouring shrubs. Tendrils none. Stipules lanceolate-acuminate, villose, quite entire. Leaves unequally pinnate; the midrib villose, grooved, two or three inches long; leaflets about six pairs, oblong, attenuated at the base, blunt, quite entire. Racemes simple, stiff, subterminating, with a peduncled flower or two frequently in the axil of the leaf. Flowers flesh-coloured, inodorous. Legumes villose, sharp, brown, an inch and half long. Seeds variegated.

Native of Carthage in America, on sandy shores^c; and every where between the Tropics^d.

4. Root perennial. Stem annual, three feet high. Leaflets generally seven or nine. The whole plant is covered with a silvery down. Flowers red, in spikes at the ends of the branches. Legumes silvery.

[Stem erect in its place of native growth, which is in North America. Flowers three or four^e.

5. Plant procumbent. Stem round. Leaflets (thirteen to seventeen) blunt with a point, streaked at an acute angle, the lower ones shorter and obovate. Spike terminating, peduncled. Calyxes gray with hairs. Stipules bristle-shaped^f.

Native of the East Indies.

6. Stems or branches white with down. Stipules in pairs, spreading. Peduncles axillary, solitary, short, one-flowered. Flowers upright, small. Legume hanging down.

Found in Coromandel by König^g.

7. This is the largest of the genus. Stem angular, smooth, changing situation variously between the joints. Leaflets between oval and lanceolate, blunt with a point, subpetioled, beautifully streaked at an acute angle, underneath. Racemes terminating, very long; with ovate, acuminate, alternate bractes; within each are three filiform peduncles supporting as many flowers, with banners broader than the leaves. Calyxes smooth. Legumes like those of the Vetch.

Native of Ceylon^h.

^a Hort. kew.

^b Browne.

^c Jacquin.

^d Forster.

^e Linn.

^f Linn. zeyl.

^g Linn. suppl.

^h Linn. zeyl.

8. Stem shrubby, round, branched, having very minute hairs scattered over it. Leaves unequally pinnate: leaflets in six pairs, on short petioles, the outmost larger, outwardly a little wider, awned, the upper surface smooth, the lower appearing hairy when magnified. Petiole scarcely pubescent. Stipules ovate, nerved, purplish. Peduncles terminating, erect, elongated: flowers at the top, opposite, approximating, nodding. Bractes ovate-oblong, acute, purplish, deciduous. Calyx tomentose-silky. Corolla purple: banner smooth above. Legume compressed, closely ciliate about the edge.—*G. virginiana* differs from this in the stem being villose, the leaves having ten or twelve pairs of leaflets, not wider outwards, the bractes awl-shaped, and the legumes every where villose¹.

Native of the Cape of Good Hope, whence it was introduced by Mr. Francis Masson in 1774^k.

9. Native of the Cape of Good Hope. Introduced by Mr. Fr. Masson in 1787. It flowers in July¹.

10. Native of India and the South Sea islands. Introduced in 1778, by Patrick Russell, M. D. It flowers in June and July^m.

11. Perennial. Stem less angular and straighter than the seventh, reddish. Leaflets (thirteen to seventeen) blunt with a point, streaked at an acute angle. Flowers narrower than the leaves. Bractes ovate; within each two flowers with capillary peduncles. Legumes like those of the Vetch, ascending at the tip, compressed, a little toroseⁿ.]

Mr. Miller says, this plant was annual here; that it had an herbaceous stalk, two feet high; that the leaves had eight or nine pairs of leaflets; that the peduncles came out opposite to these; and that the flowers were small, purple, in a loose spike, and succeeded by slender erect pods. He received the seeds from Ceylon and many other parts of the East Indies.

[It was cultivated in 1768, by him; and flowers in July and August^o.

12. This is an upright, branched slender shrub, two feet high. Stipules bristle-shaped, entire. Leaves unequally pinnate, three inches long, often distich: leaflets about ten pairs, oval-oblong, blunt with a bristle-shaped point, quite entire, smooth on both sides. Racemes axillary, loose, simple, stiffly spreading, solitary, longer than the leaves, six-flowered or thereabouts. Flowers inodorous, red and white variegated. The two upper segments of the calyx less deeply cut, and shorter than the others, and the lowest segment longer than any. Banner obtuse, emarginate, spreading very much, on a short claw; keel roundish-sickled, acuminate. Style slightly hirsute, rising almost at a right angle. Legume linear, flat, blunt with a point, transversely grooved between the seeds, brown, smooth, pendulous, or even bent back to the raceme by the incurved peduncle. Seeds black, shining.

Native of the Caribbee islands^p.

13. Branches ferruginous, tubercled with black dots, on the top of the stem tomentose. Leaflets blunt. Stipules awl-shaped. Racemes upright, resembling those of *Astragalus Alopecuroides*; flowers numerous, heaped, blue.—Found in South America by Mutis^q.

14. A very handsome plant. Stems naked, flexuose, smooth, angular. Leaflets eleven, oblong, blunt, smooth above, silky underneath, hairy, streaked; the lower ones shorter. Peduncles from each axil, naked, spiked at the end, the length of the leaves, smooth. Calyxes subvillose. Legumes like those of *Lathyrus*.—It is from this plant that the inhabitants of Ceylon prepare their Indigo, which yields a dye of a pale blue colour^r.

15. This is a woody shrub, with a roundish stem, and a brown bark. Leaflets usually nine, obovate, streaked. Legumes like those of *Orobus*.

Native of Ceylon^s.

16. Root annual or biennial. Stem reddish brown, somewhat villose, at a small distance from the root producing branches which subdivide into others: branchlets streaked, somewhat angular, villose, and sometimes so copious, that they seem to weigh down the whole plant. Leaflets about five pairs, equal, oblong-lanceolate, on both sides, especially underneath, closely pubescent; usually acuminate, but some of them obtuse, and even slightly emarginate. The common petiole is grooved; the partial ones are very short, round, somewhat villose, yellowish green. Stipules slender, villose, straight, acuminate. Peduncles from the upper axils, usually two together, seldom three, villose, reddish, shorter than the calyx; which is sublabiate, villose, permanent, tinged with yellow. Corolla purple; banner rounded, emarginate, with an ovate, white spot at the base, and streaked with white lines; villose at the back, especially near the base; claw very short, greenish yellow: wings oval, twice as long as the calyx, with short claws, and forming almost a right angle with the banner: keel subovate, acuminate, two-valved, the valves cohering above the middle. Germ hoary; style cylindric; stigma almost globular. Legume pedicelled, at first slightly sickle-shaped, but afterwards straight, almost cylindric, villose, an inch in length. Seeds ovate brown. It differs from *G. tinctoria* in having the leaflets villose on both sides, and not all emarginate; the flowers not in spikes, and the legumes by no means pendulous. Nor can it be referred to *G. senticosa*, as appears from the description in *Flora zeylanica*.—It flowered at Pavia the 21st of July 1783, and the seeds ripened on the 5th of September^t.

Native of the Cape of Good Hope, whence it was introduced here in 1787^u.

Vahl says, it differs from *G. grandiflora* in having the branchlets angular and villose, the leaflets villose underneath, the stipules awl-shaped, small, villose, the bractes awl-shaped.]

17. Mr. Miller has not described it. He informs us that it was discovered by Dr. Houstoun at Campeachy, whence he sent the seeds to Europe.

[18. Stem villose-tomentose, angular. Leaflets from four to six pairs, an inch long, linear, obtuse, mucronate, acute at the base, smooth above. Peduncles opposite to the leaf, a long span in length. Flowers remote, on villose pedicels. Bractes in pairs, awl-shaped, shorter than the pedicel. Calyx villose. Banner villose, cinereous on the outside. Legumes two inches long.—It differs from *G. cinerea* only in having narrower stipules, and the legumes in threes at each tooth of the peduncle^x.

19. This is a spreading shrubby plant, rising generally to the height of five or six feet. The leaves and branches, well pounded, and thrown into a river or pond, very soon affects the water, and intoxicates the fish, so as to make them float on the surface, as if dead: most of the large ones recover after a short time, but the greatest part of the small fry perish on these occasions.

It is a native of South America, whence it has been introduced to Jamaica, and cultivated there, on account of its intoxicating qualities^y.]

PROPAGATION AND CULTURE.

1. This is propagated by seeds, sown either in spring or autumn in an open situation. When the plants come up, keep them clean from weeds till they are strong enough to remove; then take them carefully up, and plant them in a spot well dug and cleared, in rows a foot and half distant, and one foot asunder in the rows; watering them till they have taken new root. Hoe the ground frequently between the plants; and dig it in the spring between the rows. If the stalks are cut down every year, before the seeds are formed, the roots will continue the longer, especially on a light dry soil.—Or if the seeds be permitted to scatter, the plants will come up without any care.

¹ Vahl. ^k Hort. kew. ^l Ibid. ^m Ibid. ⁿ Linn. zeyl.
^o Hort. kew. ^p Jacquin. ^q Linn. suppl. ^r Linn. zeyl.
^s Ibid.

^t Scopoli. ^u Hort. kew. ^x Vahl. ^y Browne.

4. This plant, although it is tolerably hardy, yet it is with difficulty preserved in gardens; for the seeds rarely ripen in England, and the plants are often destroyed by frosts in winter. The only method in which I have been able to keep the plants, has been by potting them, and placing them in a common frame in winter, where they enjoyed the free air in mild weather, but were protected from frost; in this way I have kept it three years, but it has not ripened seeds here.

The other sorts from the East and West Indies may be propagated by seeds sown on a hot-bed in the spring. When the plants are strong enough, transplant each of them into a separate small pot, and plunge them into a hot-bed of tanner's bark, shading them till they have taken new root. Then treat them as other tender plants, preserving them through the winter in the bark-stove. They will flower in July, and perfect their seeds in September.

If the plants are brought forward early in the spring, and the summer proves warm, the seeds may ripen here.

[GALEGA. See *Æschynomene*, *Cassia*, *Orobis*, *Sophora*.

GALEGÆ AFFINIS. See *Æschynomene* and *Cassia*.]

GALENIA. (So named by Linneus from the famous physician Claudius Galenus, born at Pergamus one hundred and thirty-three years before the Christian era.)

Lin. gen. n. 492. Reich. n. 534. Schreb. n. 673.

Juss. 84. Sherardia. Ponted. epist. 14.

Class. 8. 2. Octandria Digynia.

Nat. order of Succulentæ. Atriplices, Juss.

GENERIC CHARACTER.

CAL. Perianth very small, four-cleft, concave: divisions oblong.

COR. none.

STAM. Filaments eight, capillary, scarcely the length of the calyx. Anthers twin.

PIST. Germ roundish. Styles two, simple, reflex. Stigmas simple.

PER. Capsule roundish, two-celled.

SEEDS two, oblong, angular.

ESSENTIAL CHARACTER.

Cal. four-cleft. Cor. none. Caps. roundish, two-seeded.

SPECIES.

1. *Galenia africana*. Upright or shrubby *Galenia*.

Lin. syst. edit. 13. 310. edit. 14. 375. suppl. 227.

Mill. illust. ic. Boerb. lugdb. 2. 267.

Erect, shrubby; leaves linear, fleshy.

[2. *Galenia procumbens*. Trailing *Galenia*.

Lin. syst. 375. suppl. 227.

Procumbent; leaves ovate channelled, patulous and recurved at the tip.]

DESCRIPTIONS, &c.

Stem four or five feet high, sending out many weak branches. Leaves very narrow, placed irregularly on every side, of a light green, with a furrow running longitudinally through the middle. Flowers in loose panicles from the sides and at the ends of the branches, very small, and making little appearance.

[It is a rustic shrub, with the air of *Tetragonia*, but all the parts minute, and the whole of it obscurely papillose or bladdery. Stem round, with a few reflex little bristles. Leaves opposite, sessile, perennial. Flowers sessile, white, in a dichotomous panicle*.

Native of the Cape of Good Hope. Cultivated in 1752, by Mr. Miller. Flowering from June to August^b.

2. Found at the Cape of Good Hope, by Thunberg^c.]

PROPAGATION AND CULTURE.

These plants will not live through the winter in the open air in England, but must be placed in the green-house, or under a frame, with other hardy exotic plants, where they may have a large share of air in mild weather, for they only require to be protected from frost. In the summer they may be exposed in the open air, with other plants of the

* Linn. syst.

^b Hort. kew.

^c Linn. suppl.

same country, and in dry weather they must be frequently watered. They may be propagated by cuttings, which if planted during any of the summer months and watered frequently, will take root in five or six weeks, and may then be treated as is directed for the old plants.

GALEOBDOLO. See *Galeopsis*.

GALEOPSIS. (From γάλη, a cat, and ὄψις, aspect; the flowers gaping like the open mouth of an animal.)

Lin. gen. n. 717. Reich. 775. Schreb. 972.

Juss. 114. Tetrahit. Dill. gen. 3: 4. Galeob-

dolon. Dill. gen. 4.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of Verticillatæ or Labiatæ.

GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, five-toothed, ending in awns the length of the tube, permanent.

COR. monopetalous, ringent: tube short: border gaping: throat a little wider than the tube, at the length of the calyx above the base of the upper lip putting out on each side an acuminate toothlet, concave underneath: upper lip roundish, concave, ferrate at the tip; lower trifid, the lateral divisions roundish, the middle one larger, emarginate, notched.

STAM. Filaments four, subulate, concealed beneath the upper lip, two of them shorter. Anthers roundish, bifid.

PIST. Germ quadrifid. Style filiform, length and situation of the stamens. Stigma bifid, acute.

PER. none. Calyx stiff, straight, containing the seeds in the bottom.

SEEDS four, three-sided, truncate.

OBS. *G. Ladanum* has the upper lip of the corolla scarcely notched; it is reflex a little at the tip.

ESSENTIAL CHARACTER.

Cor. upper lip notched a little, vaulted: lower has two teeth above.

SPECIES.

1. *Galeopsis Ladanum*. Red Dead-nettle, or Nettle-hemp. Narrow-leaved Allbeal or Ironwort.

Lin. spec. 810. Reich. 3. 51. mant. 411. hort.

cliff. 314. fl. suec. n. 524. Hudf. angl. 256.

With. 607. Relb. cant. n. 433. Hall. belv.

n. 266. Scop. carn. n. 727. Pollich pal. n. 558.

Neck. gallob. 253. Krock. filef. n. 931. Villars

dauph. 2. 386.

Sideritis arvensis angustifolia rubra. Baub. pin. 233.—arv. rubra. Park. theat. 587. Raii syn. 242.

Ladanum segetum fol. latiore. Riv. mon. t. 24.

Petiv. brit. t. 33. f. 11.—quorundam fl. rubro.

Baub. hist. Raii hist. 566.

Lamium arv. annuum angustifolium rubrum verticillis spinosis. Mor. hist. 3. 386. f. 11. t. 12. f. 18.

Internodes of the stem equal, whorls remote, calyxes not pungent; leaves linear-lanceolate, almost naked.

[2. *Galeopsis villosa*. Hairy Dead-nettle or Nettle-hemp. Yellow Ironwort.

Hudf. angl. 256. With. 608. Relb. cant. n. 434.

Hall. belv. n. 267.

G. Ladanum β. Reich. 5. 2.

G. Lad. majus. Krock. filef. n. 932.

G. dubia. Leers herborn. n. 453.

Ladanum seg. fol. latiore. Riv. mon. t. 24.

Sideritis lutea. Petiv. brit. t. 33. f. 10.—arv. latifolia hirsuta lutea. Raii syn. 242.

Internodes equal, whorls remote, leaves lanceolate serrate, villose.]

3. *Galeopsis Tetrahit*. Common Dead-nettle or Nettle-hemp or hemp-leaved Dead-nettle.

Lin. spec. 810. Reich. 3. 52. mant. 411. hort.

cliff. 314. fl. suec. n. 523. lapp. 237. Hudf.

angl. 257. With. 608. Lightf. scot. 310.

Relb. cant. n. 435. Engl. bot. t. 207. Hall. belv.

n. 268. Scop. carn. n. 728. Pollich pal. n. 559.

Neck. gallob. 253. Gunn. norv. n. 75. Krock.

filef. n. 933. Villars dauph. 2. 387.

Lamium cannabino fol. vulgare. Raii syn. 240.

Cannabis

- Cannabis spuria*. Ger. 573. *emac.* 709. *Raii hist.* 561. *Riv. mon. t.* 31. *Petiv. brit. t.* 33. *f.* 8. *Mor. t.* 12. *f.* 13.
 β. *Lin. spec.* 810. *Reich.* 52. *fl. lapp.* 192. *Hall. belv. n.* 269. *Huds.* 257. *d.* *With.* 609. *d.* *Lightf.* 310. *β.*
G. cannabina. *Pollich. pal. n.* 560. *Krock. files.* n. 934.
G. speciosa. *Mill. dict. n.* 3.
Lamium cannabinum fol. fl. amplo luteo, labio purpureo. *Raii syn.* 241. *hist.* 561. n. 14. (*Cannabis spuria*). *Pluk. alm. t.* 41. *f.* 4.
Cannabis spuria fl. majore. *Riv. mon.* 32.
 γ. *Lamium cannabinum*, flor. albis, verticillis purpurascens. *Raii syn.* 241. *Huds.* and *With.* β.
 δ. *Cannabis spuria fl. albo magno eleganti*. *Morr. pin.* 19. *Raii syn.* 240. *Huds.* and *With.* γ.
Galeopsis prostrata. *Villars dauph.* 2. 388.
Internodes thickened at top; upper whorls almost contiguous; calyxes somewhat pungent.
 4. *Galeopsis Galeobdolon*. *Yellow Dead-nettle* or *Nettle-bemp*.
Lin. spec. 810. *synt.* 535. *Reich.* 3. 53. *fl. suec.* n. 525. *Lightf. scot.* 310. *Pollich. pal. n.* 561. *Leers herborn. n.* 455. *Krock. files.* n. 935. *t.* 23.
Galeobdolon luteum. *Huds. angl.* 258. *With.* 610.
G. Galeopsis. *Relb. cant.* 436. *Curtis lond.* 4. *t.* 40.
Leonurus Galeobdolon. *Scop. carn. n.* 705.
Cardiaca. *Hall. belv. n.* 275.
Lamium Galeobdolon. *Crantz. austr.* 262.
L. fl. luteo. *Riv. mon. t.* 20. 2.
L. luteum. Ger. 567. 2. *emac.* 702. 2. *Park. theat.* 606. *Raii hist.* 560. *syn.* 240. *Petiv. brit. t.* 33. *f.* 6.
L. folio oblongo luteum. *Baub. pin.* 231. *Mor. hist. f.* 11. *t.* 11. *f.* 5, 6.
Galeopsis f. Urtica iners fl. luteo. *Baub. hist.* 3. 323. 1.
Urtica iners tertia f. Lamium fl. luteo. *Dod. pempt.* 153. 3. *Lob. ic. i.* 521. 1.
Six flowers in a whorl; involucre of four leaves: (flowers six to twelve, with an involucre of as many leaves as flowers).

DESCRIPTIONS, &c.

[Stem herbaceous four-cornered. Leaves opposite. Flowers in whorls.

1. Root annual. Stem upright, a foot high, purplish, somewhat hairy or nearly smooth, brachiate, the knots scarcely swollen. Leaves petioled, entire or slightly and distantly toothed, acuminate, naked or a little hairy, of a pale green colour. About eighteen flowers in a whorl. Calyx hairy, teeth a little unequal, hardly to be called thorny or pungent; they are acuminate, and terminate in awns as long as the teeth. Corolla reddish purple, and somewhat villose; upper lip toothed; lower lip bent back, irregularly notched, with two oval yellow spots within, but underneath and on the outside many small white globules. Frequent in corn fields, in a calcareous soil, flowering from June to August^a.

Monf. Villars has a species, which he calls *intermedia*, because it seems to be a connecting link between this and *G. Tetrahit*. The calyx has no awns like this, but the flowers are only half the size of those of *Tetrahit*, which are smaller than those of *Ladanum*. The whole plant is viscid. It is not *Ladanum segetum* of Rivinus, but it approaches to it a little. The stem is from eight to ten inches high; the branches less frequent than in *Ladanum*; the leaves oval, blunt, villose and toothed; the flowers red, seldom white, extending little beyond the calyx.

2. Root annual branched. Stem thicker, higher, and more branched than the foregoing, purplish, obscurely quadrangular, grooved and villose. Leaves much broader, the serratures more in number and more regular, those next the root ovate, those on the stem lanceolate, acuminate, villose or silky, with

straight veins. Whorls more and nearer to each other. Calyx more hairy, the teeth ending in stiff awns. Corolla pale yellow and villose, of a deeper yellow about the throat: upper lip toothed, often variegated with pale purple, lower notched or scolloped, sometimes also variegated with purple. This has very much the air of the foregoing, of which Linneus makes it only a variety; it differs however in the breadth, serratures, veins, and hairiness of the leaves, as well as in the colour of the flowers^b.

Native of Germany, Switzerland, and England, as in sandy corn fields of Cambridgeshire, Nottinghamshire, Yorkshire and Lancashire, and about Bangor in Wales: flowering in July and August.

3. Root annual. Stem upright, covered with stiff hairs, swollen under the joints. Leaves ovate-acuminate, serrate, hairy and rough especially on the upper surface, two inches or more in length, and near half an inch in breadth; the petioles hairy, grooved above, and near an inch long. Flowers sessile, seventeen or eighteen in a whorl; each whorl supported by a pair of leaves, and subulate, thorny bractes. Calyx streaked, villose, the teeth terminated by sharp awns, as long again as those of *G. Ladanum*. Corolla twice as long as the calyx, either purple or white, with a spot on the lower lip variegated with purple and yellow; upper lip notched or scolloped, villose on the outside; segments of the lower emarginate and smooth: nectaries ovate, obtuse, at the base of the germ: anthers greenish, singularly two-lobed and hairy; style white; stigma red; both smooth. The swollen part of the stem, and the teeth of the calyx are covered with small glands^c.

Every part of the plant is rough with very sharp prickles, and has a strong smell when bruised.

In corn fields, and on the borders of them, on waste grounds, in coppice woods, &c. flowering in July and August. In Yorkshire they call it *Dead Nettle*, which I suppose is a corruption of *Dead Nettle*, and confounds it with *Lamium*.

β. The flower of this variety is large and elegant, above double the size of the foregoing, the corolla four times as long as the calyx, straw-coloured, and the lower lip spotted with purple. Haller, Miller, Pollich, and Krock, make it a separate species; but the structure of the whole plant being the same, Linneus will not allow it to be any thing more than a variety. All the parts are much larger and softer^d.

In Germany, Switzerland, Sweden, &c. In Great Britain, in the northern counties, as about Keighley, Settle, &c. Also in Essex, at the bottom of Ribton lane, near Woodford.

γ. Corolla white slightly tinged with red, and the lip marked with yellow, rising from a purple calyx. Joints of the stem red. Leaves narrower, of a deeper green, and the whole air different from the common sort. Mr. Doody observed this many years near the Neat-houses, and in the way from thence to Chelsea.

δ. Corolla white and very large.—Observed by Merret along the ditches from Scrooby to Sherwood forest, and by Mr. Lawson on the skirts of Cross-Fell and other places of Westmoreland and Cumberland^e.

Monf. Villars has a new species, under the name of *G. prostrata*. He refers to Merret, but says that the flowers are yellow. Its low, simple, villose stem, and its large flowers, seem to make it a distinct species, in the opinion of Monf. Villars; but it seems much disposed to vary.

Dr. Smith observed a remarkable variety at Matlock in 1788, with the terminating flowers always regularly four-cleft and salver-shaped, with four equal stamens, whilst all the rest had their proper form.

4. With respect to this species there has been a great diversity of opinion. Haller makes it a *Car-*

^a Linn. Huds. With. Woodw. Mfs.

^b Krock and Hudson. ^c Pollich, Lightf. Wither. Woodw. Mfs.
^d Linn. succ. Pollich, Woodw. Mfs. ^e Ray syn.

diaca, Scopoli a *Leonurus*, and Crantz a *Lamium*. Mr. Hudson has created a new genus for it under the name of *Galeobdolon*, in which he has been followed by Mr. Curtis and Mr. Relhan. I am averse from dividing the genera of plants, as I find them constituted by Linneus, without great necessity; and therefore leave this in the genus *Galeopsis*. Root perennial. Stems several, somewhat hirsute, furrowed, those producing flowers are nearly upright, from a foot to two feet in height, the barren stems, after flowering time is past, extend to a great length, and creep. Leaves petioled, slightly hirsute, especially at the edges, unevenly serrate, and veiny; the lower ones heart-shaped, the upper ones ovate, pointed and sessile. The whorls have from six to twelve sessile flowers, protected by an involucre, of as many bristle-shaped leaves as there are flowers. Calyx slightly hirsute, marked with ten raised lines, alternately stronger and fainter; the teeth nearly equal and acuminate; the uppermost upright, and at a distance from the rest, the two lowermost spreading open, and somewhat turned back. Corolla yellow, with the middle segment of the lower lip tawny, marked with three lines; the whole lower lip beautifully spotted with tawny or deep orange: tube a little longer than the calyx, purple and hairy within: upper lip upright, long, villous, edged with villous hairs, entire or nearly so; lower lip shorter, the lateral segments ovate, acuminate, with the outer side bent back; the middle one longer, straight and acuminate. Filaments yellow: anthers two-lobed and purplish, fleshy or glandular on the back part: pollen whitish. Style purple. Seeds brownish black, somewhat shining, oblong, convex on the outer side, three-cornered on the inner.

Native of Sweden, Germany, Switzerland, Austria, Carniola, Italy, Britain, &c. In some parts of the island frequent, as in Charlton, Hampstead, and some other woods near London; in Kent, Essex, Cambridgeshire, Suffolk, Norfolk, Worcestershire, Staffordshire, Warwickshire.

It flowers in may and june.

It is found with variegated leaves^f.

PROPAGATION AND CULTURE.

All the species, except the last, being annual, must be propagated from seeds, but being common weeds, are seldom cultivated in gardens; [though the first variety of the third species makes no bad appearance, and was therefore not unaptly named *speciosa* by Mr. Miller. As weeds among corn they are not very injurious, nor difficult of extirpation.

The fourth sort is perennial, and may be propagated plentifully by the runners, which it throws out too abundantly. When the foliage is variegated, it makes a beautiful appearance in a garden. This being a wood plant, should not be too much exposed to the sun.

GALEOPSIS. See *Lamium*, *Nepeta*, *Phlomis*, *Spermacoce*, *Stachys*.]

GALIUM. From γαλα, milk, some species having the property of curdling milk.)

Lin. gen. n. 125. Reich. 132. Schreb. 162.

Gallium. Tournef. 39. Juss. 196. Aparine.

Tournef. 39. Gertn. t. 24.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Stellatae*. *Rubiaceae*, Juss.

GENERIC CHARACTER.

CAL. Perianth very small, four-toothed, superior—in some species none.

COR. one-petalled, wheel-shaped, four-parted, sharp, without any tube.

STAM. Filaments four, subulate, shorter than the corolla. Anthers simple.

PIST. Germ twin, inferior. Style filiform, half-two-cleft, length of the stamens. Stigmas globular.

PER. Berries two, dry, globular, united.

SEEDS solitary, kidney-form, large.

Obs. Aparine Tourn. has a hispid fruit, and Galium a smooth one.

Some species have two styles.

^f Curtis, Hudf. Wither. Woodw. Mfs. Linn.

ESSENTIAL CHARACTER.

Cor. one-petalled, flat. Seeds two, roundish.

SPECIES.

* With a smooth fruit.

- [1. *Galium rubioides*. Madder-leaved Ladies Bedstraw.

Lin. spec. 152. Reich. 1. 299. Scop. carn. n. 146.

Pollich pal. n. 148. Krock. files. n. 214.

Leaves in fours lanceolate-ovate equal scabrous underneath, stem erect.]

2. *Galium palustre*. White Ladies Bedstraw.

Lin. spec. 153. Reich. 299. Fl. suec. n. 126.

lapp. 52. Hudf. angl. 67. With. 149. Relh. cant. n. 123.

Hall. belv. n. 719. Pollich pal. n. 149.

Leers herborn. n. 110. Neck. gallob. 34.

Fl. dan. t. 423. Krock. files. n. 215. Villars dauph. 2. 332.

Gallium album. Ger. 967. 2. emac. 1126. 2? Baub.

hist. 3. 721? Raii hist. 481.—palustre album.

Baub. pin. 335.

Molluginis vulgationis varietas minor. Park. theat.

565? Raii syn. 224. Petiv. brit. t. 30. f. 5.

Leaves in fours obovate unequal, stems diffused.

- [3. *Galium trifidum*.

Lin. spec. 153. Reich. 299. Fl. dan. t. 48.

Krock. files. n. 216.

Leaves in fours linear, stem procumbent scabrous, corollas trifid.

4. *Galium montanum*. Mountain Ladies Bedstraw.

Lin. spec. 155. syst. 150. Reich. 300. Hall. belv.

n. 714. Pollich pal. n. 155.

Leaves in fours or thereabouts linear smooth and even; stem weak scabrous.

5. *Galium procumbens*. Trailing Ladies Bedstraw.

With. Bot. arr. edit. 2. 151.

G. montanum. Hudf. angl. 67. Relh. cant. n. 126.

Petiv. brit. t. 30. f. 6. Villars dauph. 2. 317.

t. 7.

Mollugo montana minor *Gallio albo* similis. Raii

hist. 482. syn. 224.

Leaves on the flowering stem in sixes, lanceolate and slightly hairy; the rest generally in fours, obovate; stem prostrate, smooth.

6. *Galium lucidum*.

Allion. pedem. n. 21. t. 77. f. 2.

G. corradæfolium. Villars dauph. 2. 320?

Leaves four to six rigid subulate bowed upwards, flowers paniced terminating, larger than the fruit, which is wrinkled.

7. *Galium tinctorium*.

Lin. spec. 153. Reich. 300.

Leaves on the stem in sixes and linear, on the branches in fours, stem flaccid, one or two flowers on a peduncle.

8. *Galium uliginosum*. Marsh Ladies Bedstraw.

Lin. spec. 153. Reich. 300. Fl. suec. n. 127.

Hudf. angl. 68. With. 151. Relh. cant. n. 124.

Hall. belv. n. 713. Pollich pal. n. 150. Krock.

files. n. 217. Villars dauph. 2. 333. Barrel. it.

82. Thunb. jap. 58.

Aparine palustris minor *parisienfis*, fl. albo. Vaill.

par. 14. Raii syn. 225.

Rubia quædam minor. Baub. hist. 3. 716. 2.

Leaves in sixes lanceolate, serrate-prickly backward mucronate stiff; corollas larger than the fruit.

9. *Galium spurium*. Corn Ladies Bedstraw.

Lin. spec. 154. Reich. 301. hort. upf. 28. Hudf.

angl. 68? With. 152? Relh. cant. n. 125.

Leers herborn. n. 113. Krock. files. n. 218?

Villars dauph. 2. 330.]

Aparine femine læviore. Raii hist. 484. syn. 225.

Mill. dict. 1.

A. lævis. Park. theat. 567. 2.

A fem. lævi. Vaill. par. t. 4. f. 3.

A fol. brevioribus & femine læviore. Mot. hist. 3. 332. 3.

Leaves in sixes lanceolate keeled scabrous prickly backwards, joints simple.

- [10. *Galium tricornè*. Three-horned Ladies Bedstraw.

With. bot. arr. 153.

V. Aparine. Lin. spec. 1491. Fl. rust. t. 122.

A. vulgaris fem. minori. Vaill. par. t. 4. f. 4.

13 K

G. hispidum.

- G. hispidum*. Gært. fruct. 109. Hall. helv. n. 725.
Leaves from six to eight; peduncles lateral, almost naked, trifid, pedicels bowed back; fruit tubercled.
11. *Galium anglicum*. English Ladies Bedstraw.
Huds. angl. 69. With. 153.
Aparine minima. Raii syn. 225. t. 9. f. 1.—ramosior.
Mor. hist. 3. 333. 4.
Leaves about six, lanceolate, acuminate, reflex, ciliate-prickly; stems spreading, rough with prickles, pointing backwards; corollas smaller than the fruit.
12. *Galium saxatile*. Rock Ladies Bedstraw.
Lin. spec. 154. syst. 150. Reich. 301. hort. cliff. 34. Hall. helv. n. 718. Krock. files. n. 219. Fustieu aët. par. 1714. t. 15. Villars dauph. 2. 325.
G. helveticum. Weigel obs. 24.
Leaves in sixes obovate obtuse; stem very much branched, procumbent.
13. *Galium pyrenaicum*. Pyrenean Ladies Bedstraw.
Lin. syst. 150. suppl. 121. Gouan bot. 5. t. 1. f. 4.
Leaves in sixes, flowers lateral opposite subsessile solitary.
14. *Galium minutum*. Small Ladies Bedstraw.
Lin. spec. 154. Reich. 302. hort. ups. 28. Gmel. fib. 3. 169. n. 45.
Leaves in eights lanceolate mucronate serrate-prickly smooth incurved, fruits reflex.
15. *Galium pufillum*. Dwarf Ladies Bedstraw.
Lin. spec. 154. Reich. 302. Krock. files. n. 220. Huds. angl. 69. With. 154. Sowerby, Engl. bot. t. 74. Villars dauph. 2. 324. t. 8.
Rubeola saxatilis. Baub. pin. 334. prodr. 145.
Aparine minima f. *Rubia saxatilis minima*. Magn. monsp. 291.
Leaves in eights hispid linear acuminate; fruit smooth; peduncles dichotomous.]
16. *Galium verum*. Yellow Ladies Bedstraw, or Cheesering.
Lin. spec. 155. syst. 150. Reich. 302. hort. cliff. 34. fl. lapp. 61. suec. n. 123. mat. med. 50. Huds. angl. 69. With. 155. Curtis lond. n. 63. Lightf. scot. 115. Relb. cant. n. 127. Fl. rust. t. 54. Hall. helv. n. 710. Scop. carn. n. 153. Pollich pal. n. 152. Neck. gallob. 85. Krock. files. n. 221. Blackw. t. 435. Miller fig. t. 139. Berg. phyt. 2. 63. Plenck, ic. t. 54. Thunb. jap. 59.
Gallium. Dod. pempt. 355. f. 1. Camer. epit. 368.—*luteum*. Baub. pin. 335. Ger. 967. 1. emac. 1126. 1. Raii hist. 482. syn. 224. Mor. hist. f. 9. t. 21. f. 1.—*vulgare*. Park. theat. 564. 1. Petiv. brit. t. 30. f. 8.
Gallion verum. Baub. hist. 3. 720. 1.
Leaves in eights linear grooved, flowering branches short.
17. *Galium erectum*. Upright Ladies Bedstraw.
Huds. angl. 68. With. 152.
Leaves mostly in eights, lanceolate, with fine prickly serratures; panicles trichotomous; stem flaccid.
18. *Galium Mollugo*. Great Ladies Bedstraw.
Lin. spec. 155. Reich. 303. hort. cliff. 34. fl. suec. n. 125. Huds. angl. 68. With. 155. Relb. cant. n. 128. Hall. helv. n. 711. Scop. carn. n. 155. Pollich. pal. n. 154. Neck. gallob. 84. Krock. files. n. 224. Fl. dan. t. 455. Plenck, ic. t. 55.
Gallium f. *Mollugo montana*. Ger. emac. 1127. 4. quoad ic.
Mollugo belgarum. Lob. ic. 802.—*vulgaris*, &c. id. 802.—*vulgatior*. Park. theat. 565. Raii hist. 481. syn. 223. Petiv. brit. t. 30. f. 4.
Rubia angulosa aspera. Baub. hist. 3. 716. 1.
Leaves in eights, ovate-linear, subserrate, spreading very much, mucronate, stem flaccid, branches spreading.
- [19. *Galium sylvaticum*. Wood Ladies Bedstraw.
Lin. spec. 155. syst. 150. Reich. 303. Hall. helv. n. 712. Pollich pal. n. 153. Leers herborn. n. 116. Krock. files. n. 222. Blackw. t. 168.
- Rubia sylvatica lævis*. Baub. hist. 3. 716. 4. Rail hist. 481.
Mollugo vulgator. Mor. t. 22. f. 1.—*montana*. Park. theat. 564. 3.
G. f. Mollugo montana. Ger. 968. 4. quoad descr. Leaves in eights smooth and even but scabrous underneath; a pair of floral leaves on capillary peduncles; stem smooth and even.]
20. *Galium linifolium*. Flax-leaved Ladies Bedstraw.
Mill. dict. n. 8. Ait. hort. kew. 1. 144. Barrel. ic. 583. (Rubia).
Leaves in sevens or thereabouts linear-lanceolate smooth and even, peduncles capillary, stem upright four-cornered.
- [21. *Galium rigidum*. Rigid Ladies Bedstraw.
Ait. hort. kew. 144.
Leaves whorled linear scabrous above, panicles divaricate, stem upright round hairy and roughish.
22. *Galium aristatum*. Bearded Ladies Bedstraw.
Lin. syst. 150. Reich. 304.
G. lævigatum. Lin. spec. 1667. Villars dauph. 2. 327.
G. bericum. Turra diar. 1764. p. 119.
Rubia lævis linifolia, flor. albis montis virginis. Bocc. mus. 83. t. 75.
Leaves in eights lanceolate smooth and even, panicle capillary, petals awned.
23. *Galium scabrum*.
Lin. syst. 151. Jacqu. austr. 5. t. 422. With. 154.
Leaves about eight scabrous mucronate, flowering branches subtrichotomous.
24. *Galium sylvestre*.
Pollich. pal. n. 151. Krock. files. n. 223. Hall. helv. n. 715.
G. asperum. Schreb. spicil.
G. Boccone. Allion pedem. n. 24? Bocc. mus. t. 107. Barr. ic. 57?
G. album minus. Vaill. par. 78.
Leaves six to nine, linear-lanceolate, quite entire, awned; stems angular decumbent.
25. *Galium hierosolymitanum*.
Lin. spec. 156. Reich. 304. amæn. 4. 451.
Leaves in tens lanceolate-linear, umbels fastigate.]
26. *Galium glaucum*. Glaucous Ladies Bedstraw.
Lin. spec. 156. syst. 151. Reich. 304. mant. 330. Hall. helv. n. 716. Scop. carn. n. 152. Jacqu. austr. 1. t. 81. Fl. dan. t. 609. Krock. files. n. 226. Bocc. mus. 2. t. 116. Allion. pedem. n. 29.
Rubia montana angustifolia. Baub. pin. 333. prodr. 145. Raii hist. 480.
Leaves linear, peduncles dichotomous, stem smooth and even.
- [27. *Galium cinereum*.
Allion. pedem. n. 22. t. 77. f. 4. Villars prosp. p. 202.
Leaves in sixes linear rigid serrate-prickly, stems smooth flexuose filiform somewhat woody at bottom, branchlets upright leafless with about three flowers.
28. *Galium tenuifolium*.
Allion. pedem. n. 23. Villars prosp. p. 19. Ger. prov. 226. n. 2.
Leaves six to eight linear grooved rigid, slightly and finely serrate, with a small prickle at the end; stems diffusely branched, each branch terminated by a panicle; peduncles two or three-flowered.]
29. *Galium purpureum*. Purple Ladies Bedstraw.
Lin. spec. 156. Reich. 305. hort. cliff. 34. Hall. helv. n. 721.
G. nigro-purpureum montanum tenuifolium. Col. ecphr. 1. 298. Baub. pin. 335.
Leaves linear-bristle-shaped, peduncles capillary longer than the leaves.
30. *Galium rubrum*. Red Ladies Bedstraw.
Lin. spec. 156. Reich. 305. hort. cliff. 34. Scop. carn. n. 154. Pollich. pal. n. 156. Allion. pedem. n. 20. Krock. files. n. 227. Baub. pin. 335. Mor. hist. 3. 332. Clus. hist. 2. 175. Park. theat. 564. 2. Raii hist. 482.
G. sprengerianum. Baub. hist. 3. 721. f. 2.
Leaves linear patulous, peduncles very short.

** With a hispid fruit.

31. *Galium boreale*. Cross-leaved Ladies Bedstraw.
Lin. spec. 156. *Reich.* 305. *fl. lapp.* 60. *suec.*
n. 124. *hort. cliff.* 64. *Huds. angl.* 70. *With.*
156. *Lightf. scot.* 116. *Sowerby engl. bot. t.* 105.
Hall. belv. n. 722. *Scop. carn. n.* 151. *Jacqu.*
vind. 24. *Krock. fles.* *n.* 228. *Villars dauph.*
2. 329.
Rubia pratensis lævis acuto fol. *Baub. pin.* 333.
prodr. 145. *Raii hist.* 478. *Pet. brit. t.* 30. *f.* 7.
Baub. hist. 3. 716. 3.
Mollugo montana erecta quadrifolia. *Raii syn.* 224.
Baub. hist. 716. *f.* 3?
Leaves in fours lanceolate three-nerved smooth, stem
upright.
[32. *Galium pilosum*. Hairy Ladies Bedstraw.
Ait. hort. kew. 145.
Leaves in fours nearly oval hairy nerveless, seeds hairy.
33. *Galium rotundifolium*. Round-leaved Ladies Bed-
straw.
Lin. spec. 156. *Allion. pedem. n.* 31. *Krock. fles.*
n. 229. *t.* 42. *Jacqu. austr. t.* 94. *Hall. belv.*
n. 727. *Villars dauph.* 2. 333. *Thunb. jap.* 59.
(See *Asperula lævigata*.)
Rubia quadrifolia vel rotundifolia lævis. *Baub. pin.*
334. *prodr.* 145. *Raii hist.* 478.
Leaves in fours ovate obtuse terminating in a very short
prickle, ciliate about the edge, three-nerved; stem
procumbent.
34. *Galium maritimum*. Sea Ladies Bedstraw.
Lin. syst. 151. *Reich.* 305. *mant.* 38. *Allion.*
pedem. n. 37. *Gouan illustr.* 5?
Leaves in fours hispid, peduncles one-flowered, fruits
villose.
35. *Galium bermudianum*.
Lin. spec. 153. *Reich.* 306. *Gron. virg.* 16. (Apa-
rine) *ed.* 2. 18. *Pluk. alm.* 224. *Raii suppl.*
261. 2. (Rubia).
Leaves in fours linear obtuse, branches very much sub-
divided.
36. *Galium græcum*. Candia Ladies Bedstraw.
Lin. syst. 151. *Reich.* 306. *mant.* 38. *Alp. exot.*
t. 166.
Leaves about six linear-lanceolate, stems woody, the
whole plant rough with hairs.]
37. *Galium Aparine*. Common rough Ladies Bedstraw.
Cleavers or Goosegrasses.
Lin. spec. 157. *Reich.* 306. *fl. suec. n.* 128.
Huds. angl. 70. *With.* 157. *Lightf.* 117. *Relb.*
n. 129. *Curt. lond.* 2. 9. *Hall. belv. n.* 723.
Scop. carn. n. 157. *Pollich. pal. n.* 157. *Neck.*
gallob. 83. *Leers herb. n.* 117. *Krock. fles.*
n. 230. *Fl. dan. t.* 495. *Blackw. t.* 39. *Sabb.*
hort. i. t. 78. *Berg. phyt. 2.* 39. *Gartn. fruct.*
110. *t.* 24. *f.* 1. (Aparine). *Plenck, ic. t.* 56.
Aparine. Dod. pempt. 353. *Fuchs. hist. t.* 50. *Baub.*
hist. 3. 713. *Ger.* 963. *i. emac.* 1122. *i.* *Raii*
hist. 484. *syn.* 225. *Mill. dict.*—vulgaris. *Baub.*
pin. 334. *Park. theat.* 567. *Mor. hist. f.* 9. *t.* 22.
f. 1. *Petiv. brit. t.* 30. *f.* 11.
Leaves in eights lanceolate, keels scabrous with prickles
pointing backwards, joints villose.
38. *Galium parisiense*.
Lin. spec. 157. *Reich.* 307. *Relb. cant. n.* 130.
Villars dauph. 2. 332. *Barr. ic.* 58.
Aparine minima. *Raii syn.* 225. *t.* 9. *f.* 1? See
G. anglicum. n. 11.
Leaves linear, peduncles two-flowered.
[39. *Galium megalospermum*.
Allion. pedem. n. 35. *t.* 79. *f.* 4.
Leaves in fives elliptic acuminate finely serrate, pedun-
cles two-flowered, fruits large wrinkled.]
40. *Galium saccharatum*.
Allion. pedem. n. 39. *Villars dauph.* 2. 331.
Aparine fem. coriandri saccharati. *Park. theat.* 567.
Raii hist. 484. *n.* 3. *Mill. dict. n.* 2.
[41. *Galium umbrosum*.
Forst. fl. austr. n. 500.
42. *Galium viscosum*.
Vahl symb. 2. 29.
Lower leaves in fours obovate, upper ones in fives, li-
near-lanceolate serrate, keel and stem smooth.

43. *Galium paschale*.
Vahl symb. 2. 29. *Forst. descr.* 203.
Leaves in nines or thereabouts linear-lanceolate rugged
backwards, peduncles axillary, elongated trichoto-
mous.
44. *Galium aparinoides*.
Vahl symb. 2. 30. *Forst. descr.* 30.
Leaves in fives oblong, on the edge and along the keel
prickly backwards, joints smooth.
45. *Galium album*.
Vahl symb. 2. 30.
Leaves in eights or thereabouts oblong unarmed rugged
on the edge, stem pubescent even.
46. *Galium microcarpum*.
Vahl symb. 2. 30.
Leaves in fives or thereabouts, lower ones oblong, upper
ones bristle-shaped, peduncles trifid.
47. *Galium tuberosum*.
Lour. cochinch. 79.
Leaves in fives lanceolate, peduncles beaped axillary.
48. *Galium cruciatum*. Cross-wort.
Eng. bot. 143.
G. Cruciat. *Scop. carn. n.* 100. *Wither. arr.* 149.
Valantia Cruciat. *Lin. spec.* 1491. *Huds. angl.*
441. *With.* 1139. *Relb. cant. n.* 739. *Villars*
dauph. 2. 334.
Cruciat. *Raii syn.* 223.—hirsuta. *Baub. pin.* 335.
Blackw. 76. *Ger.* 965. *emac.* 1123. *i.* *Park.* 566.
Mor. hist. f. 9. *t.* 21. *f.* 1.
Leaves in fours ovate hairy, stem simple above, hairy,
bunches of flowers lateral with two leaves, flowers
polygamous, fruit smooth.

DESCRIPTIONS, &c.

Root usually dying red, in most of the sorts pe-
rennial. Stems herbaceous, four-cornered. Leaves
sessile, in whorls or surrounding the stem in form
of a star. Flowers either terminating in a kind of
panicle, or else axillary. Fruit smooth, wrinkled
or set with hooked stiff hairs or prickles.

1. This has the appearance of *G. boreale*, but the
leaves are double the breadth, with the nerves three
in number, and scabrous underneath. The stem
firm and upright. The panicle of flowers short and
conglomerate. The seeds smooth and even^a. Stems
a foot high and more, slender, swelling at the joints,
purplish brown, rough when rubbed from the bot-
tom upwards. Leaves reflex on the edge, but not
at the end. Corolla white. Seeds very smooth and
glossy^b.

Native of the Palatinate, Silesia, Idria, &c. flow-
ering in July.

Perennial. Introduced in 1775, by Drs. Pitcairn
and Fothergill^c.

2. Root slender, creeping, perennial. Stem flac-
cid, branched from the joints, a foot or more in
length, the corners set with sharp hooked prickles,
pointing downwards. Leaves in fours on the
branches, on the stem sometimes five or even six,
under the flowers in pairs, those at the base of the
branches largest, of different sizes in the same whorl
lanceolate, obovate, or ovate-lanceolate, very ob-
tuse, smooth except at the keel and edges, which
are set with very short hooked hairs. Flowers nu-
merous, white, on lateral and terminating peduncles,
which are usually trifid, and subdivided^d.

Common on the banks of rivers and ditches, and
in moist meadows; flowering in July.

Dr. Withering has observed a dwarf variety, similar
to the foregoing, but scarcely a foot in length; re-
sembling the figure of *G. trifidum* in the *flora danica*,
but readily distinguishable by the corolla of four
divisions, and the divided peduncles.

Dr. Withering has also observed another variety,
resembling the *palustre*, except that the leaves grow
in fives. Dr. Stokes remarks, that the leaves are
narrower, but always blunt and generally unequal;
that it is as large as the *palustre*; that the branches
are next in roughness to those of *G. Aparine, spurium*,

^a Linn. spec. ^b Scopoli, Pollich, Krock. ^c Hort. kew.
^d Withering, Stokes in With. Pollich, Leers, Krock.

and *Valantia Aparine*; that he has been accustomed to refer it to the *uliginosum*; but that the inequality and bluntness of the leaves, and the want of the thorn-like point at the end of them, induces him to believe it, with Haller and Ray, to be a variety of the *palustre*; though, being found in the same situations, it is not unlikely but it may turn out to be a distinct species.

3. Root annual, very small and slender. Stem slender, bent back, stiffish, hairy, very much branched from the bottom almost to the top, the branches three or four together, divaricate. Leaves broadish, obtuse, smooth, only a little scabrous underneath. Peduncles usually in threes, very slender, the length of the leaves, one-flowered; the flowers very small, white and three-parted. Stamens three. Fruit very small, smooth and even.—Native of Denmark, Silesia, Canada^e. It flowers in July.

4. Stature between *G. Mollugo* and *glaucum*. Stem weak, rough. Leaves in fives on the stem, reflex, sublinear; on the branches in fours. Flowers in trifid corymbs, white, purplish on the outside before they expand. Anthers brown^f.—According to Haller the leaves are in eights. Pollich makes them eight on the stem, and six on the branches. Krocker, five to eight on the stem, and four to six on the branches. Haller describes the stem to be three feet high, round, firm, upright, swelling under the leaves, not much branched. Leaves narrow, hollow and glaucous underneath, ending in a short awn, sharper towards the top of the stem; ovate-lanceolate, and smaller under the flowers. Peduncles branched, many-flowered, ending in a kind of convex umbel. The flower is among the largest of this genus, and white. The peduncle swells under the seeds.

Pollich adds, that the stem is very smooth, glaucous-green, and says that it is divided into many branches: that the leaves are hardish, a little rolled back on the edge, smooth and glaucous above, scabrous, whitish, and grooved beneath.

The root, according to Krocker, is reddish. The stem eighteen inches high, scabrous, branched very smooth, glaucous, upright, obscurely four-cornered.

These descriptions do not perfectly agree; and after all, Gouan (illustr. p. 6) is of opinion that this and the *glaucum* are but one species.

Native of Germany and Switzerland.

5. Distinguishable from *G. palustre* (says Ray) by its smallness, smoothness of its stems and leaves, and place of growth, namely on hills.—Perennial. Stems and branches matted together, and spreading on the ground. Flowering-stem from two to six inches high, twisted, appearing cylindrical to the naked eye, but when magnified to have four rounded corners. Leaves often in fours at the bottom of the stem, five about the middle, and six at the top, unequal in size in the same whorl, sometimes obovate-lanceolate, the edges beset with minute prickly hairs pointing towards the end, the keel smooth: those of the branches sometimes in fives. Peduncles lateral and terminating, single, bifid or trifid, springing from the whorls at the joints of the stem.—Lightfoot takes this to be only a variety of *uliginosum*, growing in dry and mountainous pastures: but Dr. Stokes has found it to be the same in marshes as on hills. Heaths and mountains, also in marshy places. In Dudley wood. It flowers from June to August^g.

6. Perennial. Stem very much branched next the root. Flowering stems upright, simple, sharply quadrangular, herbaceous, green. The whole plant shining. Leaves in sixes, then fives or fours, half round, subulate, somewhat scabrous about the edge, but hardly to be known by the touch, bowed upwards. Flowers in a terminating panicle; corolla white, larger than the fruit, which is oblong-ovate, bowed in, black and wrinkled.—Native of the county

of Nice, &c. in dry places: also probably in Dauphiné^h.

7. This abounds in the woods of Canada; the roots are employed by the Indians in dyeing the quills of the American porcupines red. The French women there sometimes dye their clothes with these roots, which are but small, like those of *G. luteum*. Neither air, sun, nor water change the colourⁱ.

8. Root perennial, creeping, slender. Stems from procumbent erect, often putting out roots at the base, from a finger's length to a foot or eighteen inches, the corners rough, with very minute prickles; two or more branches springing from each joint. Leaves six, sometimes seven or eight, or even nine in a whorl; five lines long, and one broad, lanceolate, not much bent back at the edge, which is set with very minute prickles; in other parts they are smooth, of a bright green above, but glaucous underneath. Flowers in panicles at the ends of the stem and branches, in trifid divisions, the peduncles very short: at the base of these a pair of leaflets or bractes. Corolla white, larger than the fruit; Haller says it has a tinge of rose colour. Anthers very small, purplish^k. Fruits rough, according to Tournefort^l.

Native of Sweden, France, Germany, Switzerland, Great Britain; on wet heaths, in bogs, low meadows, by river sides, and other watery places. It flowers in July and August.

9. Stem quadrangular, prostrate, hardly branched, prickly downwards at the corners. Leaves usually in sixes, ovate-lanceolate, prickly backwards, keeled. Peduncles axillary and terminating, bowed in, three-flowered, all the flowers hermaphrodite. Seeds globular, smoothish. Style bifid. Stigmas globular. Bractes subulate at the base of the pedicels^m.

Such certainly is our Cambridgeshire plant, and it agrees with the specific character given by Linneus, as also with his observation, that it is allied to *G. Aparine*, but is smaller.—Haller assures us that the specimen sent him by Mr. Hudson was *Valantia Aparine*; and Dr. Stokes informs us that his specimens from the garden of Mr. Sole at Bath, who probably had his plants from Cambridgeshire, were also *V. Aparine*; and yet none but hermaphrodite flowers have been observed by the late Mr. Lyons, Mr. Relhan, or myself.—There can be no doubt of our plant being *Aparine semine levitre* of Ray; who says that it is of a lower growth than *G. Aparine* or common Goose-grass, with the runners or bottom branches shorter; the leaves smaller, less hirsute and paler; the seeds not entirely smooth, but much less hirsute.—Haller's description is very short, but as he asserts that all the flowers are androgynous, ours can scarcely be the same plant with his n. 724. Nor is it his n. 725, though he makes *A. sem. levi* of Vaillant, and *A. sem. levior* of Ray, synonymous with it; for that also has androgynous flowers. Gærtner has a species (p. 109) which he calls *Galium hispidum*, and which he makes synonymous with this of Haller: and they are both synonymous with *Valantia Aparine* of Linneus. See n. 10. Nor can it be Krocker's *G. spurium*, to which he attributes pale yellow flowers. It agrees very well with the description given by Leers.—Stems scarcely a foot high, diffused; joints equal, naked; leaves at bottom six, above four. Fruit smooth, at length becoming wrinkled and brown.—There is little doubt but that it is the second *Aparine* of Parkinson, though he describes the leaves as not at all rough, or sticking to what they touch. It is also the third *Aparine* of Morison.—Neither of these authors have figured it.

It is very common in the corn in Cambridgeshire, especially where the soil is calcareous, as about Gogmagog hills, Linton, &c. Also in various parts of Oxfordshire.—According to Hudson, in the isle of Thanet; about Leatherhead and else-

^e Linn. spec.

^f Linn. spec.

^g Withering & Stokes in With.

^h Allioni.

ⁱ Kalm. amer. engl. edit. 3. 14.

^k Pollich, Haller, Krocker, Relh.

^l Fl. paris.

^m Lyons in Relh. cant.

where in Surrey; and near Stamford.—In the isle of Wight, as Dr. Withering says.

It is an annual plant, and flowers in June and July, and even later in the stubble after the corn is off.

10. Leaves from six to eight, the upper surface smooth, the rib underneath rough. Umbels on peduncles, generally two to a whorl, opposite, dividing into three branches, not leafy at the base. The peduncles are prickly, bear three flowers, and are curved downwards. Fruit roughish, beset with a number of minute tubercles, but which do not end in hairs.

This plant appears to be different from *Aparine* *femine* *læviore* of Ray, which is commonly taken for *G. spurium* of Linneus. It much resembles *G. Aparine*, and is clearly of the same natural genus with the *Galiums*, although Linneus inserts it among the *Valantias*.

11. Root annual, branched. Stems from a foot to eighteen inches in height, the corners rough with prickles pointing backwards, jointed, branched, branches alternate, flowering branches opposite. Leaves six or seven in a whorl, reflex, lanceolate or linear-lanceolate, naked. Panicle terminating; peduncles trifid. Corolla greenish yellow, small. Seeds larger than the corolla, smooth.—The prickly hairs at the edge of the leaves point forwards; and sometimes there are a few scattered hairs on the surface; those of the branches are generally in twos, as in Ray's figure. Branches rough. Peduncles smooth, generally dividing into three, one of them supporting two flowers; sometimes dividing simply into three or two. Flower herbaceous, seed small, roundish, less rough than in the other species of *Aparine*.

Dr. Stokes cannot discover any difference between *G. parisiense* of Linneus and *G. anglicum* of Hudson, except in the roughness and smoothness of the fruit, which induces him to believe that they are mere varieties.

Found by Sherard on a wall at Hackney, and at Eltham—by Hudson, in sandy ground between Dartford and Northfleet, and on a wall at Farningham in Kent—by Mr. Crowe, on the walls of Bingham church in Norfolk.

12. Scarcely a hand high. Root large, producing a prodigious number of stems, which are angular. Leaves in great abundance, without any prickle at the end. Peduncles one-flowered, very short, scarcely emerging from the leaves, even when the seed is ripe. Seeds very large, wrinkled. This is Haller's description, who doubts very much, whether his plant be the same with that of Linneus.—Krocker says that it has a small, slender, creeping root: a smooth stem, a hand or a foot in height; five or six leaves, oblanceolate or obovate, smooth, ending in a slender tip; the flowers axillary, the peduncles sustaining one to four flowers, in a corymb, the corymbs four to six-flowered, short. Corollas white. Seeds large. Perhaps this may be the *saxatile* of Moench, and the *harcynicum* of Weigel. It is an annual.

Native of Spain and Switzerland, on mountain rocks.

13. Stems weak, of a finger's length, and branched; the internodes scarcely the length of the leaves, which are smooth, somewhat convex, and mucronate. Native of the Pyrenees.

14. This very much resembles *G. verum*, but it is less than a hand in height, and is decumbent. Stem quite smooth, not scabrous even about the edge. Leaves a little convex, not bent back on the edge. Fruit fleshy, large, with the peduncles reflex, whence they are conglomerate.—Native of the Empire of Russia. Perennial.

15. Root branched, perennial. Stems numerous, from three to ten inches high, branched, the corners commonly rough with prickles. They form large tufts, covered with innumerable milk-white

flowers, very conspicuous at a distance. Leaves seven or eight, lanceolate or linear, scabrous, tipped with a short pale bristle; the lower ones imbricate. Seeds small. It is allied to *G. uliginosum*.—Not only the corners of the stem, but the edges and midribs of the leaves are rough, with short spreading hairs. Leaves rarely up to eight. In the English Botany it is said from six to eight, or even nine in a whorl, equally spreading.

Native of Provence. On the limestone hills near Kendal in Westmoreland; flowering in August.—Matlock Bath, Derbyshire. July.

16. Root perennial, creeping, slender, somewhat woody, of a yellow colour. Stem from one to two feet high, upright, slightly four-cornered, somewhat flexuose, scabrous, pubescent below slightly; above more obviously, pale green, branched towards the top; the joints cylindrical, subovate, whitish, surrounded with a slight margin: branches brachiate, opposite, alternately much shorter. Leaves about an inch in length, bluntish with a slight point, narrowed at the base, the edges rolled back, and rough with minute prickles turned upwards, visible only with a magnifier, above slightly wrinkled, dark green and glossy, underneath hollowed and paler; the lowermost usually eight in a whorl, but not unfrequently ten, the upper ones decreasing to seven, and so down to two, and even one at the extremities of the branches. Flowers in a panicle, numerous, small, fragrant with a peculiar odour. The panicle about a span in length, interrupted, branched; the branches many-flowered, unequal, leafy, with single leaflets on the pedicels. Corolla yellow. It is observed by Dr. Withering, that the segments of the corolla are greatly expanded; that the style is cloven more than half way down; and that not only the corolla, but the stamens also and pistil are yellow. It is common in most parts of Europe, in pastures; and by the sides of fields and roads, in a dry soil; flowering from June to August and September. It will flourish in the most unrelenting drought, when not a blade of grass is to be seen.

Besides the names set down in the title, Gerarde says it is called *Maid's-hair*, and *petty Mugwet*, which last is from the French *petit Muguet*. I must observe that the common name *Bedstraw*, (which we have from the German) is from the verb *to strew* or *strow*, anciently written *strow*; thus the multitude *strawed* branches in the way before Christ. Before the invention of feather-beds, a variety of herbs were used to strew beds with; among these doubtless this was one: in Johnson's edition of Gerarde, it is called *our Ladies Bedstraw*. (p. 1127.) Strawberry is derived from the same origin.

It is an inveterate notion that the flowers and herb of this plant will curdle milk. Dioscorides names it *Γαλιον* from this property. The same property is attributed to it by Galen. Matthiolus informs us that in Tuscany they use it for this purpose, in order that their goat and sheep's milk cheese may eat the sweeter: Gerarde, who was a Cheshire man, says, that in his country, especially about Namptwich, they use it in their rennet, esteeming that the best cheese which is made with it: and in some of the Western isles they curdle milk with a strong decoction of this herb. Though no coagulation has followed in the experiments which I have seen tried, yet I should not perhaps have ventured to dispute the fact, were I not supported by Bergius and Krocker, who could not succeed in coagulating milk with this herb alone. The *Galium* has probably been put into milk destined to make cheese, not so much for the purpose of curdling it, as of giving it a flavour, or, as Matthiolus expresses it, to make it eat the sweeter.

The French prescribe the flowers in hysteric and epileptic cases. Both these and the leaves discover a sensible acidity to the taste; and the flowery tops committed to the still as soon as gathered, give

* Hudson.

o Stokes in With.

p Ray.

q Linn. suppl.

r Linn. spec.

s Hudson.

t Woodw. Mss.

u Curtis.

x Withering.

over (says Lewis) a pretty strong acid liquor in a moderate heat. The restringent and refrigerating virtues therefore ascribed to this plant appear to have some foundation⁷. From this account I should have been rather surpris'd that the trials to curdle milk have not succeeded with Bergius, Krocker and myself, had not the former assured us that he could not procure any acid in distillation.

Boiled in alum-water, the flowering stems dye of a good yellow colour. The roots dye a very fine red, not inferior to madder, but they are small². An ingenious gentleman; however, conversant in dying, assured Mr. Curtis, that the roots produced a brighter colour than Madder; and on that account they may be worth trying, especially as the rest of the plant may be successfully used in dying yellow.

They were cultivated a few years since under the direction of the Committee of Privy Council for Trade. The roots were supposed on an average to weigh seven ounces; and the produce, when dry, to be twelve hundreds and an half on an acre³.

The roots of most of the plants belonging to the natural order of Stellatæ yield more or less of a red dye. Not only this species, but *Galium sylvaticum*, *Mollugo* and *Aparine* are recommended for this purpose. So also are *Asperula arvensis*, *tinctoria*, and *cynanchica*. See Arduini memoires, 1. p. 55. Steinmeyer diff. de Rub. tinct. Memoires de l'Acad. Franc. 1746. p. 104. Memoires des Savans Etrangers. 4. p. 4. Pollich palat. Linn. suec. & Act. Holm. 1742. Allioni fl. pedem. &c.

17. Root perennial, branched. Stems several, rather upright, swelled at the joints, roughish at the corners, a little hairy, branched; flowering branches opposite. Leaves eight, sometimes six only in a whorl, lanceolate or linear-lanceolate, naked. Panicle terminating, dividing into threes. Flowers white. Seeds small⁴. Dr. Stokes adds, that the whorls of leaves are from four to five inches distant, and bent back; that the ferratures are directed towards the point of the leaf, and not bowed back as in the other rough-leaved species; and that his specimen agrees with Mr. Hudson's description in every respect, except that the stem is smooth. Mr. Hudson refers to the *G. austriacum* of Jacquin (fl. austr. 1. t. 80.) as the same plant with this, but Dr. Stokes assures us that it is quite different.

In meadows and moist pastures. Found in Heydon common, Norfolk, by Mr. Bryant. It flowers in June and July.

18. The whole plant is smooth to the touch. Root perennial, creeping. Stem two, three and four feet high, and even more, generally depressed, unless supported by the weight of the branches, quadrangular (by which it is distinguished from the next species), thickest just above the joints. Leaves usually eight on the stem, and six on the branches, in every whorl, unequal, oblong-ovate, or lanceolate, suddenly tapering to a sharp point, a little hairy on the keel, and at the edges, but not rough to the touch. Flowering branches very much branched, sustaining abundance of white flowers, the four segments of which are lanceolate and pointed: they rise from the whorls of leaves, generally two long and two short ones from each whorl, forming in the whole a panicle. The style is cloven down to the germ, or more properly there are two styles. One seed is generally much larger than the other⁵.

Common in hedges and bushy places: flowering from June to August. It is called *Wild Madder*, and *Great Bastard Madder*. The roots yield a red dye, like the true Madder, and of a brighter colour: like that also, they dye the bones of animals, that feed on them, red.

Varieties.

I have observed it sometimes with flowers of a pale yellow colour.—Scopoli enumerates four varieties: 1. with the bottom leaves emarginate. 2. with the leaves rounded at the end, the nerve ending in

a point or prickle. 3. with the leaves toothletted or ferrulate, each indentation ending in a prickle, which corresponds with our common plant. 4. with the leaves quite entire and reflex, a small alpine plant, only a finger's length. This Dr. Stokes has observed on Malvern hills: he is of opinion that *Mollugo montana minor*, *Gallio albo similis* of Ray, comprehends this variety, as well as the *G. procumbens*. Haller also mentions this variety.

19. Stems lofty, weak, smooth and even, very obscurely cornered or roundish. Leaves broad-lanceolate, scabrous on the keel and about the edge, becoming glaucous. Peduncles elongated, the outmost often two-flowered, and near these two leaflets. Flowers very minute, nodding before the flowers open⁶. The stem thickens at the joints, and is from one to two feet in height. Branches single or many from the same joint. Leaves in a whorl from eight to ten, sometimes only six, mucronate; the keel not always scabrous. Segments of the corolla very broad, and at the end sharp: style very short. Seed round, black, wrinkled; usually only one in a pair comes to maturity. The whole plant is somewhat glaucous; it is stouter, the stem swells more under the whorls of leaves, than in *G. Mollugo*, and the angles are hardly to be observed. The root is perennial, yellowish on the outside; and affords a very fine red dye like the last.

Native of Germany, Switzerland, and the South of Europe, in woods; flowering from June to August. Cultivated in 1713.

20. Native of the South of Europe. Cultivated in 1759, by Mr. Miller. It flowers in June and July, and is perennial.

21. Perennial. Flowering in June. Introduced in 1778⁷.

22. Perennial. The whole plant smooth and even. Stem a foot high. Leaves eight or nine in a whorl, nicely lanceolate, by no means stiff⁸. Native of Italy, on monte Baldo, and Cenisio. It flowers in July. Introduced in 1778, by Mr. Thomas Blackie⁹.

23. Perennial. Stems upright, closely beset with very short soft hairs. Leaves sometimes in sevens, those of the branches fewer, beset with soft hairs, linear, grooved, the edges turned in; the lower ones bent down. There is no appearance of prickles on the stem or leaves. Flowering branches opposite, one always shorter than the other. Peduncles smooth¹⁰.—Found by Dr. Stokes in a hedge-row, in a marly soil, on the side of Red House Lane, near Worcester; flowering in August.—In Austria, by Professor Jacquin.

24. Root small, very slender, creeping. Stems from a span to a foot in length, and more, brittle, slender, prostrate, a little hairy at bottom. Leaves quite entire, ending in a fine long prickle; the lower ones somewhat rough, with hairs about the edge, the upper ones smooth, but sometimes they are all hairy. Panicles terminating and axillary, short; peduncles branched, not very leafy, bifid or trifid. Corolla white. Style very deeply cloven. Seeds minute, round, cloven¹¹.

Native of France, Germany and Switzerland, where Haller informs us it is frequent by way sides, in corn-fields and stony places: it is also found in the Alps, and there becomes a more humble creeping plant. He mentions several varieties.

25. In stature this approaches very near to *G. rubrum*. Native of Palestine¹².

26. Root perennial, somewhat creeping, branched. Stems slender, weak, prostrate, glossy. Leaves five or six, glossy, glaucous underneath, hardly scabrous on the edge, the lower ones turned back. Flowers white, in subtrifid, small umbels¹³.—According to Haller and Jacquin, there are eight leaves in a whorl—according to Allioni six or seven, ferrate on the edge—according to Krocker, eight or even nine in the lower ones, but five or six in the upper ones;—Scopoli assigns only six to the lower whorls, four to

⁷ Lewis.

² Withering and Lightfoot.

³ Young's annals, vol. 18.

⁴ Hudson.

Withering, Stokes in With. Relhan, Ray, Pollich, Scopoli, Haller.

⁶ Linn. spec. & syst.

⁸ Hort. kew.

⁹ Linn. spec.

¹⁰ Hort. kew.

¹¹ Stokes in With.

¹² Haller, Pollich, Krocker.

¹³ Linn. spec.

¹⁴ Ibid.

the upper ones, and two only to those on the branches.—Haller says that it resembles n. 24.—that the stem is upright; the leaves glaucous, thicker, terminating in shorter awns; the upper ones fewer, broad, ovate-lanceolate. The top of the stem, and the branches subdivided, bearing flowers of four times the size, in upright bunches.

Native of the South of Europe, Tartary and Siberia, in mountain woods and fissures of rocks. It flowers in our gardens from June to September, and was cultivated in 1713^m.

27. Perennial. This is an elegant species covered with a glaucous bloom; when this bloom is wiped off, the plant is of a shining, not a dark green. Stems obscurely quadrangular. Leaves of a long elliptic form, wider at the end, and terminating in a remarkable white prickle. A panicle of flowers terminates the stem and branches, the extreme peduncles bearing usually three flowers, one of which is abortive. Seeds large, dirty white, smooth, but when full ripe wrinkled. It is not the *glaucum* of Linneus, the linear leaves of which are longer, not spreading, not ferrulate-aculeate; the branches also in that are terminated rather with an umbel than a panicle of flowers. Native of Piedmont and Dauphinéⁿ.

28. Perennial. Stems eighteen inches high, smooth, sharply quadrangular. Branches opposite, one longer than the other. Leaves eight at bottom, diminishing till they come to two, or even one; truly rigid, not soft and flexible, smooth, but not shining. Peduncles very much branched, capillary, longer than the leaf, divaricate. Segments of the corolla large, white and awned. Seeds slightly wrinkled, but neither hairy nor rough; the colour of them black^o.

Native of the county of Nice, Provence and Dauphiné.

29. Stem upright, very much branched, and so leafy that the leaves can hardly be numbered. They are usually in eights, smooth, and keeled underneath. Branches ascending, and from their axils innumerable peduncles, above the leaves upright, sustaining few flowers: these and the stems are dark purple; and the roots dye red^p.—By Lago Lugano: near Ripa and Chiavenna: in the counties of Nice, Montferrat, &c.—Perennial.

30. Root perennial, slender. The whole plant pale green. Stems slender, prostrate, near a foot in length, rough with small prickles. Leaves on the stem six or seven in a whorl, on the branches four or five, bent down, lanceolate, quite entire, dusky green, smooth, but the edge very rough with prickles, and a little prickle at the end; they are three lines in length, and half a line in breadth; the upper leaves are in pairs. The flowers are very small, of a pale purple colour (*fusco-rubri*, Scop.) or white, disposed in panicles at the end of the stem and branches^q. This differs from the foregoing species, with which it seems to have been confounded by several authors, by the leaves not being elliptic, nor spreading out; also by the shortness of the peduncles, and its manner of flowering: for in *G. purpureum* the flowers are terminating, rather paniced; purple, not reddish brown^r.

Native of the Palatinate, Silesia, Carniola, and Italy. It flowers in July and August.

31. Root perennial, long, slender, dark purple. Stems a foot or eighteen inches in height, obscurely quadrangular, stout, much branching at top; the lower part smooth, the upper slightly hairy: or, according to English Botany, rough to the touch, though not hairy. Leaves lanceolate or oval-lanceolate, rough to the touch, quite entire, blunt, bent back at the edges, having a strong nerve along the middle, and a smaller one on each side; at the end of each branch a pair of small stipular leaves, oval or ovate, and slightly hairy. Flowers copious, in a terminating panicle, formed of racemes or corymbs growing gradually smaller. Corolla white,

with ovate segments. Styles two. Fruit covered with long, soft whitish hairs, slightly curved upwards.

Native of Lapland, Sweden, Silesia, Switzerland, Carniola, Britain; as in the mountains of Westmoreland and Wales: near Pooley bridge by Ulfwater, in Cumberland: near the ferry at Winandermeer. In the county of Durham. In Scotland not unfrequent on rocks by the sides of rivers and lakes. It flowers in July and August.

This is one of the species whose roots afford a beautiful red dye. The process is thus described by Haller—The roots are gathered in spring, they are ground with malt dust, and infused in small beer, the woollen yarn is macerated, and then boiled in this liquor. Gunner adds that the yarn is first dyed yellow in a decoction of birch leaves.

32. Perennial. Native of North America. It flowers in June and July. Introduced in 1778, by John Fothergill, M.D.^s

33. Root perennial, slender, creeping, cinnamon-coloured. Stem weak, a foot long, slightly grooved; branches alternate, green at bottom, pubescent, with very short hairs, and leafy; frequently purplish above, naked and jointed. Leaves subpetioled, four or very seldom five in a whorl, spreading, broad, with very short hairs on the nerves and at the edges; towards the top of the stem, where it terminates in two or three almost dichotomous peduncles, is placed a pair of lanceolate leaves. Peduncles naked, an inch or two inches in length, bifid, seldom trifid, diverging, each terminating in a solitary flower, and filiform. Corolla white. Seeds white, bearded with long hairs^t. See *Asperula lævigata*.

Native of Silesia, Switzerland, Savoy, Austria, &c. It flowers in July and August.

34. Root perennial. Stem brachiate, rough with hairs, very much branched; the last branches dichotomous. Leaves in fours, rarely fives; the upper floral ones frequently in pairs; lanceolate-ovate; rough, with hairs on both sides, the uppermost subpetioled. Peduncles capillary, shorter than the leaves, usually one-flowered, seldom bifid. Flowers small^u.

Observed in the Levant, by Schreber.—If it be Gouan's plant, it is also native of Montpellier, the Pyrenees, and the County of Nice: but according to Gouan the leaves are eight in a whorl.

35. Whorls of leaves very distant; flowers dark purple; seed lanuginose. Native of Virginia and Maryland.

36. Stems variously bent and twisted, and somewhat woody: branches straight, stiff, herbaceous, rough with white villose hairs, as are also the leaves, peduncles and germs. Leaves stiff, upright, the length of the internodes, sparingly hairy, green. Peduncles longer than the leaves, subdivided, forming a kind of umbel of few flowers, capillary.—Native of the islands of the Archipelago^x.

37. Root annual. Stem four feet high or more, weak, and supporting itself on other plants, brittle, jointed, the joints villose at the base; the angles are set with pellucid prickles pointing downwards: it is very much branched, and the branches are opposite. Leaves six or eight in a whorl (eight or ten, *Lin.* four to seven or more, *With.* six to eight, *Hall. Poll. Krock.* seven, *Baub. Ray.*—eight on the lower, six on the upper whorls of the stem, on the branches fewer, from six to three, two and even one), lanceolate-linear, terminating in an awn, which is frequently purplish, the upper surface scabrous, the lower smooth, the edges and keel set with prickles pointing backwards. Flowers few, small, on rough peduncles. Calyx none. Corolla whitish, scarcely longer than the germ, divided to the base into four ovate-acute segments. Styles two, shorter than the corolla, standing wide asunder. Fruit set with hooked bristles^y.

^m Hort. kew.

ⁿ Allioni.

^o Ibid. & Gerard.

^p Haller.

^q Pollich.

^r Allioni.

^s Hort. kew.

^t Krock.

^u Linn. mant.

^x Ibid.

^y Curtis compared with *With.* Linn. & Scop.

Common in hedges, and cultivated grounds; flowering from may and june through the summer and part of the autumn.

Its well-known property of adhering to whatever it comes in contact with, acquired it the names of *Cleavers*, *Clevers*, *Clivers*, and *Catchweed* or *Scratchweed*; from the same idea it had the more elegant appellation of *Philanthropon* among the Greeks and Romans; from its roughness it has been called *Hariff*, or rather *Hairough*; and from being a favourite food or medicine of Geese, *Goose-grass*, *Goose-share*, and *Gosling-weed*.

Linneus informs us that they use the stalks in Sweden as a filtre to strain their milk through. Dioscorides relates that the shepherds made the same use of it in his time; and certainly it is no bad thing to take out hairs from the milk, where a sieve is not at hand. It is reckoned to purify the blood, and for that purpose the tops are an ingredient in spring broth. The expressed juice of the herb, taken to the amount of four ounces or a quarter of a pint, night and morning, during several weeks, is very efficacious in removing many of those cutaneous eruptions, which are called, although improperly, scorbutic. It has been much celebrated in scrophulous and cancerous sores, but experiments made in our hospitals have not turned out in its favour. The seeds have been substituted for coffee. The roots, like most of the genus, will dye red, and eaten by birds, have tinged their bones of that colour. It is a troublesome weed, particularly in young quick-set hedges, which it will entirely overgrow and choke. Linneus says it is very apt to infest their crops of peas. Being an annual weed, it is easily destroyed, if it be cut or plucked up early, for it begins to seed in june.

38. Root annual. Stems a foot high, weak, scabrous backward. Leaves in sevens, lanceolate, mucronate, scabrous especially on the edge. Flowering-branches opposite, shorter. Peduncles naked, two or three-flowered. Corollas yellow, small^a. See n. 11.—If it be Haller's n. 726. The corolla is white, and very small; the fruit hispid, with white hairs.—Ray says, the flowers of his *Aparine minima* are of an herbaceous colour, and the fruits less rough than in the other *Aparines*.—Tournefort describes the flowers of his *A. palustris minor parisiensis* as white, and the fruits as rough.

39. This forms a tuft; the stems are not more than a finger's length; branches alternate: from the last whorl they produce two-flowered peduncles. Flowers pale yellow. Fruits dirty white.—Native of Monte Ceniso^a.

40. Supposed to be a variety of *V. Aparine*. Parkinson says it differs from *Aparine levis* only in having the seed rough like unto a Coriander Comfit.—Ray, that the leaves are smooth, and the fruits warted, but not lappaceous or tenacious.—Haller also considers it as a variety of *A. sem. levi* of Vaillant, and *A. Valantia* of Linneus, with the surface of the fruit a little more rough. He affirms that it has a quadrifid fertile flower sitting between two trifid male ones. n. 725.—Vaillant says that the fruit of his *A. sem. levi* is only shagreened, by which it differs chiefly from *A. sem. coriandri* of Parkinson, and by the surface of its leaves, which are almost smooth.

41. Native of New Zealand^b.

42. Root annual. Stems several, ascending, a finger or a hand in height, smooth, even, made four-cornered by a pale decurrent line, branched from all the lower axils, ending at length towards the top in opposite peduncles, an inch long. In a rich soil the stems are frequently a span high, and spreading. Lower leaves in fours, small, ovate; upper in sixes, linear-lanceolate, only half the length of the internodes, smooth, having minute prickles on the edge turned towards the tip; uppermost in sevens; floral-leaves in threes, finally in pairs. Peduncles from all the axils of the leaves, branches, and upper

part of the stem, opposite, filiform, by threes. The last pedicels two-flowered. Corolla yellowish-white. Seeds minute, viscid.

This is allied to *G. spurium* only in the number of leaves; the stem is not weak, and in appearance it does not differ from *G. Aparine*; besides it is less, the prickles on the edge of the leaves are turned towards the tip not the base, the angles of the stem and the keel of the leaves are not prickly and rugged, and the seeds are viscid. *Galium lucidum* of Allioni has a stricter, higher, shining stem, the leaves longer and narrower, the edge quite even, and the flowers larger. *G. cinereum* of the same author is more nearly allied to this as to the leaves, but differs in its glaucous colour, in being less branched, in having larger seeds, and in other circumstances. Native of Tunis, in the mountains.

43. Stems weak, a foot and half high or more, simple, smooth, even. Whorls very remote, eight or nine-leaved: leaves an inch and half long, mucronate, smooth, even except at the edge. Universal peduncles axillary, opposite, solitary, spreading very much, three inches long, filiform: partial peduncles in threes, twice or three times trichotomous, fastigiate, capillary. There are two small leaves below the partial peduncles. Seeds minute. Perhaps not different from *G. hierosolymitanum*.

44. Stem herbaceous, weak, half a foot high, prickly backwards at the corners, with equal joints. Leaves having minute prickles at the edge, the upper ones very minute prickles curved in on each side. Peduncles three from the ends of the branchlets, bifid. Seeds as in *G. Aparine*, from which it differs in the size, number and form of the leaves.

45. Stem the thickness of a pigeon's quill, erect, branched, a cubit in height, pubescent, unarmed, purplish brown at the joints, the internodes a span in length. Leaves sessile, commonly in sevens, mucronate, scarcely ferrulate at the edge, smooth above, villose underneath, especially on the keel. Fruit hispid. Native of Smyrna.

46. Stems several, filiform, a hand and sometimes a finger high, erect, rugged at the corners below, but even above, branched at the base, dichotomous or trichotomous at top. Lower leaves in fours, petioled, obovate, small; the middle ones in sixes, a little longer, marked with two lines, oblong, sharp at both ends; the upper ones, under the branches and universal peduncles in sixes or sevens, bristle-shaped, the length of the internodes; all nearly even, having very minute cilia along the edge, scarcely visible without a magnifier. Peduncles terminating, capillary, in threes, bifid: pedicels one-flowered: two bristle-shaped leaflets at the base of the peduncles. Flowers purple. Fruit minute, whitish-hispid. Native of the dry mountains of Tunis; and of Spain, but not so common there. It has many points in common with *G. parisiense*. Perhaps it may not be different from *G. tunetanum* of Poiret; but in that there are nine or ten leaflets in a whorl, and the peduncles are hairy-rough^c.

47. The root is a small, oblong, irregularly shaped, white, farinaceous tuber. Stem herbaceous, a foot and half high, rufous, procumbent, simple. Leaflets four or five together, lanceolate, quite entire, smooth, glaucous. Flowers white, on longish, one-flowered, heaped, axillary peduncles. Fruit roundish, rough. It is cultivated in China and Cochinchina for the roots, which are eaten boiled, either whole or in meal. They are esteemed to be very salutary^d.

48. Root perennial, creeping, slender. Stems branched only at the base, weak and supporting themselves on bushes, quadrangular, very hairy, jointed; having at every joint four ovate, entire, soft, hairy leaves, from the axils of these all the way up the stem arise several slender, forked, many-flowered peduncles, each furnished with two small leaves at the first division. The flowers are yellow, formed exactly like the *Galiums*, except that some are only

^a Linn. spec.

^b Allioni.

^c Forster.

^d Vahl.

^e Loureiro.

male, and some of the hermaphrodites are five-cleft. The style is deeply cloyen, and there are two germs, one of which is generally abortive. The fruit is globose, smooth, and sheltered by the reflex leaves^c.

This, and some other of the Linnean Valantias (glabra, articulata, Aparine) belong to the Galiums, several of which (Mollugo, Aparine, parisiense) have male flowers mixed with the perfect ones. Wiggers had a specimen of Valantia in which all the flowers were hermaphrodite; on the contrary I have frequently sought in vain for a single perfect flower; but barrenness is not uncommon in plants that run much and freely at the root: such plants may be compelled to become fertile by confining the roots.

Croffwort is not uncommon about hedges and in thickets, flowering early in summer.]

PROPAGATION AND CULTURE.

Most of these plants being destitute of beauty, and being subject to spread, and over-run whatever plants grow near them, are seldom cultivated except in botanic gardens. The perennial sorts may easily be propagated, by parting their roots either in spring or autumn: and they will grow in almost any soil and situation. [If the annual sorts are permitted to scatter their seeds, they will maintain themselves in a garden without any culture, except that of preventing other weeds from overgrowing them. The common Goosegrafs (G. Aparine) propagates itself prodigiously, by the adhesion of its fruits to the hairy coats of cattle, &c.]

If it should be thought adviseable to propagate the Galium verum for the use of the roots in dyeing, the best soil is a sandy loam, heavy soils will not answer. Prepare the land as for flax. Sow four pounds of seed on an acre. In april hoe out the plants to six inches square. The crop will require three or four hoeings more the first season. In may or june take up as many plants as will leave the rest at the distance of one foot square. In march following take up again as many as will leave the rest standing at two feet square: and in the fourth take up the whole crop in march; keeping it all the while clean from weeds^f.

GALIAM. See *Asperula*, *Rubia*, *Sherardia*, *Valantia*.

GALLINARIA. See *Cassia*.

GALLIUM. See *Asperula*, *Galium*, *Sherardia*.

GALOPINA.

Thunb. nov. gen. 1. Lin. gen. Schreb. n. 231. Juss. 198.

Class. 4. 2. Tetrandria Digynia.

Nat. order of *Rubiaceae*. Juss.

GENERIC CHARACTER.

CAL. none.

COR. monopetalous, quadrifid, superior, revolute.

STAM. Filaments four, capillary, long, inserted into the receptacle, deciduous.

PIST. Germ inferior. Styles two, a little shorter than the stamens, growing out. Stigmas simple.

PER. none.

SEEDS in pairs, naked, subglobular, muricate.

ESSENTIAL CHARACTER.

Cal. none. Cor. four-cleft. Seeds two, naked.

SPECIES.

1. *Galopina circæoides*.

Thunb. nov. gen. 1. Lin. syst. 166.

Anthospermum Galopina. Thunb. prodr. cap. 32. DESCRIPTION, &c.

Root annual. Stem herbaceous, round, red, smooth, seldom branched, erect but weak, about two feet high. Branches alternate, spreading, resembling the stem. Leaves opposite, petioled, oblong, acute, entire, smooth, pale underneath, an inch or a little more in length. In the axils of the leaves are others, similar, but smaller. Flowers terminating, in a loose diffused panicle. Peduncles and pedicels opposite, capillary, smooth, with two opposite, bristle-shaped bractes. Native of the Cape of Good Hope.

^c Engl. bot.

^f Young's Annals, vol. 18.

In the systematic arrangement it has its place before *Aphanes*; from which it differs in having the filaments inserted into the receptacle, and a superior corolla. It differs from *Galium* in having no calyx, and two styles^e.

Thunberg, who constituted this genus, has thought fit, in his *Prodromus Plantarum Capensium*, to sink it, and make this plant a species of *Anthospermum*.

GANDOLA. See *Basella*.

GANGITIS. See *Nardus*.

GANIA. See *Corchorus*.

GANITRUS. See *Elaeocarpus*.

GARB. See *Salix Babylonica*.

GARBANZO. See *Cicer arietinum*.

To that article we may add, that this pulse is highly esteemed in Spain, as fodder for cattle, and at the table in soups and other dishes, but principally with that standard dish in all families, the *olio*.

The Garbanzo plant has a very inconsiderable root, not penetrating far into the ground, and therefore not impoverishing the soil: its branches are numerous, and the large sort throws out shoots three feet long: it varies in colour, white, reddish, or rather gray; and the seed of each is of the same colour respectively. Each pod contains but one seed, or at most two; not round, but rather pointed; whence it is compared to a sheep's head, and has the trivial name *arietinum*. In Castile they say that the best sort has the surface wrinkled like the face of an old woman, the broad back of a porter, and the bill of a parrot; the colour also should be, not white, but of a pale hue; and it should be light, soft and fat.

This pulse does not succeed so well in the hotter parts of Spain as in the cold northern districts of Fuente Saucó, Mentrída, and others. It is sowed in the same manner as other pulse, and generally in open fields. A soft rich soil is best for the Garbanzo, but a stiff clay is not unsuitable to it. The Spaniards have a proverb, that rain never hurts Garbanzos. There are two principal sorts, or rather varieties, the large or winter, and the small or summer Garbanzo. The former should be sown the first week in october, that it may acquire a good root, and spread out luxuriantly for fodder. The latter must be sown about the end of february.

The consumption of the Garbanzo is great in Spain to fodder cattle, and it is reckoned tolerably nutritive. It is used either by feeding it on the ground, by cutting it green, and giving it to them in the stall or stable, which is the best, or dried after the manner of hay. The large sort furnishes an early fodder for cattle, sheep and lambs, at a time when no other is to be had. It is a good preparation for other crops, because it is destructive of weeds, and shades the surface of the ground^a.]

GARCINIA. (So named in honour of Laurent Garcin, M.D. F.R.S. who travelled into the East-Indies.—Mangostans is the Malayan name.)

Lin. gen. n. 594. Reich. 650. Schreb. 813. Juss. 256.—Mangostans. Garc. in philos. trans. vol. 38. n. 431.—Mangostana. Rumph. Gertn. fruct. t. 105.

Class. II. 1. Dodecandria Monogynia.

Nat. order of *Bicornes*? Lin.—*Guttiferæ*. Juss.

GENERIC CHARACTER.

CAL. Perianth four-leaved: leaflets roundish, concave, obtuse, spreading, permanent.

COR. Petals four, roundish, concave, spreading, a little larger than the calyx.

STAM. Filaments sixteen, (twelve or more, G.) upright, placed in a cylinder, simple, shorter than the calyx. Anthers roundish.

PIST. Germ superior, suboval. Style scarcely any. Stigma flat, spreading, peltate, eight-cleft, obtuse, permanent.

PER. Berry coriaceous, globular, large, one-celled, crowned with the stigma.

SEEDS eight, convex on one side, angular on the other, villose, fleshy.

^e Thunberg.

^a Dillon in Young's ann. n. 138.

Obs. The clefts in the stigma, and the number of seeds vary from five to eight. Juss.—six or eight, the cells of the pericarp as many.—There is no other difference between this genus and *Cambogia* but the form of the stigma and the number of stamens. Gærtn.

ESSENTIAL CHARACTER.

Cal. four-leaved, inferior. *Pet.* four. Berry eight-seeded (or five, six to eight.) crowned with the peltate stigma.

SPECIES.

1. *Garcinia Mangostana*. *Mangostan*, or *Mangosteen*.
Lin. spec. 635. *synt.* 443. *Reich.* 2. 416. *hort. cliff.* 182. *Ellis monogr. descr. & fig. Plenck, ic. t.* 360.
Mangostans. *Garc. phil. trans.* vol. 38. p. 232. *abr.* 8. 755. *t.* 8. *Bont. jav.* 115.
Mangostana. *Rumph. amb.* 1. 132. *t.* 43.
M. Garcinia. *Gærtn. fruct.* 2. 105.
Laurifolia javanensis. *Baub. pin.* 461. *Raii hist.* 1662.
Arbor peregrina, aurantio simili fructu. *Clus. exot.* 12.
Leaves ovate, peduncles one-flowered.
- [2. *Garcinia celebica*.
Lin. spec. 635. *Reich.* 416.
Mangostana celebica. *Rumph. amb.* 1. 134. *t.* 44.
Leaves lanceolate, peduncles three-flowered.
3. *Garcinia cornea*.
Lin. syst. 443. *Reich.* 417.
Lignum corneum. *Rumph. amb.* 3. 55. *t.* 30.
Leaves lanceolate, veinless; peduncles one-flowered, drooping.]

DESCRIPTIONS, &c.

1. The *Mangostan* rises with an upright stem near twenty feet high, sending out many branches on every side, which are placed opposite, and stand oblique to each other, and not at right angles; the bark of the branches is smooth, of a gray colour, but on the tender shoots it is green, and that of the trunk is of a darker colour, and full of cracks: the leaves are entire; they are seven or eight inches long, and about half as much in breadth in the middle, gradually diminishing to both ends, of a lucid green on their upper side, and of an olive colour on their under, having a prominent midrib through the middle, with several small veins running from that to both sides of the leaf. The flower is like that of a single Rose, composed of four roundish petals, which are thick at their base, but are thinner toward their ends; they are of a dark red colour. The fruit is round, the size of a middling Orange; the top is covered by a cap, which was the stigma on the top of the style, and is indented in rays to the number of six or seven, which are obtuse. The shell of the fruit is like that of the Pomegranate, but softer, thicker, and fuller of juice; it is green at first, but changes to a dark brown, with some yellowish spots; the inside of the fruit is of a Rose colour, and divided into several parts by thin partitions, as in Oranges, in which the seeds are lodged, surrounded by a soft juicy pulp of a delicious flavour, partaking of the Strawberry and the Grape, and is esteemed one of the richest fruits in the world; the trees naturally growing in the form of Parabolas, and the branches being well garnished with large shining green leaves, they have an elegant appearance, and afford a kindly shade in hot countries, therefore are worthy of cultivation in all those countries where there is warmth enough to ripen the fruit.

[According to Dr. Garcin, this tree grows to about seventeen or eighteen feet high, with a straight taper stem like a Fir, having a regular head in form of an oblong cone, composed of many branches and twigs, spreading out equally on all sides, without leaving any hollow. The leaves are oblong, pointed at both ends, entire, smooth, of a shining green on the upper side, and of an olive on the back. The colour of the flower resembles that of a Rose, only deeper and less lively. The two upper leaflets of

the calyx are something larger than the lower ones; they are greenish on the outside, and of a fine deep red within, the red of the upper ones more lively than that of the lower ones. The calyx is supported by a green pedicel, which constantly comes out at the end of a twig above the last pair of leaves. The fruit is from an inch and half to two inches in diameter: the rind is commonly a quarter of an inch thick, and a little like that of a pomegranate, but softer, thicker, and fuller of juice, of a dark brown purple on the outside, mixed with a little gray and dark green; on the inside of a rose-colour. The juice is purple. The segments into which it is divided are unequal in size, and uncertain in number; they are always the same in number with the rays of the stigma, and they do not adhere to each other. The segments are white, a little transparent, fleshy, membranous, full of juice: and each incloses a seed of the figure and size of an almond stripped of its shell, having a protuberance on one of its sides, and covered with two thin skins, the outermost of which serves for a basis to the filaments and membranes of which the pulp is composed. Their substance comes very near to that of Chestnuts, as to their consistency, colour, and astringent quality.

It is esteemed the most delicious of the East-Indian fruits, and a great deal of it may be eaten without any inconvenience: it is the only fruit which sick people are allowed to eat without scruple^a. It is given with safety in almost every disorder; and we are told that Dr. Solander, in the last stage of a putrid fever at Batavia, found himself insensibly recovering, by sucking this delicious and refreshing fruit. The pulp has a most happy mixture of the tart and sweet, and is no less salutary than pleasant, for which reason, in hot climates, it is allowed, with the sweet orange, in any quantity, to those who are afflicted with fevers, either of the putrid or inflammatory kind. The dried bark is used with success in the dysentery and tenesmus; and an infusion of it is esteemed a good gargle for a sore mouth or ulcers in the throat. The Chinese dyers use this bark for the ground or basis of a black colour, in order to fix it the firmer.

Native of the Molucca islands, whence it has been transplanted to Java and Malacca. The head is so fine and regular, and the leaves so beautiful, that it is looked upon at Batavia as the tree most proper for adorning a garden, and affording an agreeable shade^b.

Mr. Miller asserts that he received perfect specimens by Mr. Robert Millar, who gathered them near Tolu, in New Spain. These specimens do not appear in Mr. Miller's herbarium, now in the possession of Sir Joseph Banks, so that we cannot decide the point with certainty; we may however presume that Mr. Miller was mistaken, the *Mangostan* never having been found in America by any traveller before or since the time of Mr. Robert Millar; and it is probable that Mr. Philip Miller might mistake some species of *Clusia* for the *Mangostan*; the *Clusias* being common in South America, and bearing some resemblance to this tree.

2. This is not a lofty tree, but it has an elegant spreading head. Leaves opposite, on short strong petioles, five or six pairs, narrower and sharper than those of the first sort, seven or eight inches long, and more than three fingers broad, thick and strong, but less so than in the common *Mangostan*; the parallel transverse ribs are so fine as scarcely to be distinguished; in a young tree they are nine inches and a half long, and three and a half or four inches broad, entirely smooth and even. The fruit resembles that of the common *Mangostan*, but sometimes grows to a larger size; it is of a yellowish red or saffron colour, like the Pomegranate, and is not crowned with a star, but with a little crown, which is hollowed above, and broader there than at

^a Garcin in *Philos. trans.* and *Ellis*.

^b *Ellis and Cook's voyage*.

its origin.—Native of the island of Celebes about Macassar, whence it has been transplanted into Amboina and Java, where however it seldom bears ripe fruit.

3. The trunk of this tree is lofty, but not very thick; it is covered with a black bark, adhering firmly to the wood; the branches extend wide, and divide into many short branchlets, which have a pair of leaves at each joint; these are large, from eleven to fifteen inches long, and four broad, but on old trees shorter, smooth, firm and shining, having a thick midrib beneath, but above smooth and grooved; petioles thick and short, frequently so curved in that the lower side of the leaf becomes the upper one. The flower comes out from the branch between the upper leaves, hanging on an incurved peduncle, having the form of a small Rose, but of a yellow colour. Fruit solitary, growing close to the branch, the size of a Plum, crowned by a sort of wart like the head of a nail; it is of a dusky brown or smoky colour on the outside, and within it has a mucose pulp, in which lie a few seeds in shape of a half moon. It has a resinous smell when fresh. The wood is heavy and very hard like horn, whence Rumphius names it *Lignum corneum*; it is used for the handles of tools, and the young trees in building, the older ones being too hard to work. Native of Amboina, in high remote mountains^c.]

PROPAGATION AND CULTURE.

1. As there are but few of the seeds which come to perfection (for the greatest part of them are abortive) so most of those which have been brought to Europe have failed; therefore the surest way to obtain the plants, is to sow the seeds in tubs of earth in the country, and when the plants have obtained strength, they may be brought to Europe; but there should be great care taken in their passage, to screen them from salt water and the spray of the sea, as also not to give them much water, especially when they are in a cool or temperate climate, for these plants are very impatient of wet. When the plants arrive in Europe, they should be carefully transplanted, each into a separate pot, filled with light kitchen-garden earth, and plunged into the tan-bed, observing to shade them from the sun till they have taken new root; then they must be treated in the same manner as other tender plants from hot countries.

[It may be increased here by cuttings in the same manner as is directed for *Gardenia*.

GARDENIA. (So named by Ellis, in honour of Alexander Garden, M. D. of Charlestown in Carolina.)

Ellis. *Lin. gen.* n. 296. *Reich.* 320. *Schreb.* 416. *Thunb. diff.* 6. *Lin. suppl.* 23. *Gærtn. t.* 28.

Juss. 201.—*Jasminum*. *Mill. fig. t.* 180.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Contortæ*.—*Rubiaceæ*. *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, five-cleft, superior: divisions upright, permanent.

COR. one-petalled, funnel-form, or salver-form. Tube cylindric, longer than the calyx. Border flat, five-parted.

STAM. *Filaments* none. *Antbers* five, inserted into the mouth of the tube, linear, streaked, half the length of the border.

PIST. *Germ* inferior. *Style* filiform or club-shaped. *Stigma* standing out, ovate, obtuse, two-lobed, often furrowed.

PER. *Berry* (berried Drupe. G.) dry, one, two or four-celled.

SEEDS very many, flattened, imbricate in rows. (two rows in each cell. J.)

OBS. The most natural number of the parts is five; but they vary in the antbers, divisions of the calyx and corolla, as far as nine. *Thunb.*

ESSENTIAL CHARACTER.

Cor. one-petalled, contorted or twisted. *Stigma* lobed. *Berry* inferior, two to four-celled, many-seeded.

^c Rumphius.

SPECIES.

* Without thorns.

1. *Gardenia radicans.* Rooting *Gardenia*.

Lin. syst. 251. *Thunb. jap.* 109. *t.* 20. *diff. n.* 1.

t. 1. *f.* 1. *Kæmpf. amæn.* 5. 808.

Corollas obtuse, calyx angular, leaves elliptic, stem rooting.

2. *Gardenia florida.* Fragrant *Gardenia*, or Cape *Jasmin*.

Lin. spec. 305. *syst.* 251. *Reich.* 1. 592. *suppl.*

163. *mant.* 346. *Thunb. diff. n.* 2. *Ellis in*

phil. trans. 51. *p.* 932. *t.* 23. *Ait. hort. kew.*

1. 293. *Rumph. amb.* 7. *p.* 26. *t.* 14. *f.* 2.

Lour. cochinch. 147. *n.* 1, 2.]

Jasminum capense. *Mill. dict. n.* 7. *fig. t.* 180.

Ebret. pict. t. 15. *Aët. nat. cur.* 1761. *p.* 333.

t. 8.

Corollas salver-shaped, calycine segments vertical, lanceolate-subulate; leaves elliptic.

[3. *Gardenia Thunbergia.* Starry *Gardenia*.

Lin. syst. 251. *suppl.* 162. *Thunb. diff. n.* 3. *Ait.*

hort. kew. 294.

Thunbergia capensis. *Montin in act. holm.* 1773.

p. 289. *t.* 11.

Bergkias. *Sonnerat iter. nov. guin.* 48. *t.* 17, 18.

Corollas salver-shaped; calyxes bursting laterally, with the segments dilated at the tip; leaves elliptic.

(*Corollas* obtuse, calyx columnar, leaves ovate, acute,

Thunb. cap.)

4. *Gardenia latifolia.* Broad-leaved *Gardenia*.

Ait. hort. kew. 294.

Corollas salver-shaped, calycine segments subulate, obtusely keeled; leaves obovate-roundish.

5. *Gardenia gummifera.* Gummy *Gardenia*.

Lin. syst. 251. *suppl.* 164. *Thunb. diff. n.* 4. *t.* 2.

f. 3.

Corollas obtuse, calyx rough with hairs, leaves oblong, obtuse.

6. *Gardenia Muffænda.*

Lin. syst. 252. *suppl.* 163. *Thunb. diff. n.* 5.

Muffænda formosa. *Lin. syst. edit.* 13. *p.* 182.

mant. 45. *Jacqu. amer.* 70. *t.* 48. *pict.* 38. *t.* 70.

Corollas acute, calyx rough with hairs, leaves ovate, acute.

7. *Gardenia Genipa.*

Swartz prodr. 51.

Genipa americana. *Lin. spec.* 251. *syst.* 227. *Reich.*

1. 523. *Plum. ic.* 136.

Janipha. *Marcgr. bras.* 92. *Raii hist.* 1666. (*Pomifera*.)

Leaves oblong-lanceolate, peduncles axillary, many-flowered, corollas salver-shaped, with an abbreviated tube.

8. *Gardenia Rothmannia.* Spotted-flowered *Gardenia*.

Lin. syst. 252. *suppl.* 165. *Thunb. diff. n.* 6. *Ait.*

hort. kew. 294.

Rothmannia capensis. *Thunb. act. holm.* 1776. *p.*

65. *t.* 2.

Corollas funnel-shaped, calycine segments subulate, leaves oblong. (*Corollas* acute, subcampanulate, calyx smooth, leaves oblong, acute. *Thunb. cap.*)

** Thorny.

9. *Gardenia spinosa.* Thorny *Gardenia*.

Lin. syst. 252. *Thunb. diff. n.* 7. *t.* 2. *f.* 4.

Flowers sessile, hirsute.

10. *Gardenia dumetorum.* Bushy *Gardenia*.

Retz. obs. 2. *n.* 31. *Ait. hort. kew.* 295. *Gærtn.*

fruct. 1. 140.

G. spinosa. *Lin. suppl.* 164.

Thorns opposite, longer than the leaves, germs smooth.

11. *Gardenia micranthus.*

Lin. syst. 252. *Thunb. diff. n.* 8. *t.* 1. *f.* 2.

Flowers sessile, smooth.

12. *Gardenia scandens.* Climbing *Gardenia*.

Lin. syst. 252. *Thunb. diff. n.* 9. *t.* 2. *f.* 5.

G. jasminoides. *Retz. obs.* 2. *n.* 30.

Climbing; flowers peduncled.

13. *Gardenia uliginosa.* Boggy *Gardenia*.

Retz. obs. 2. *n.* 32.

Branches thorny at the end, tube of the corolla hirsute within.

14. *Gar-*

14. *Gardenia armata*.
Swartz prodr. 51. *obs.* 81.
Mussaenda spinosa. *Linn. mant.* 45. *Reichb.* 1. 489.
Jacqu. amer. 7. t. 49.
Spines of the branchlets terminating in fours, calycine segments linear wedgeform, flowers crowded.
15. *Gardenia aculeata*. *Round-leaved Gardenia*.
Ait. hort. kew. 295.
G. Randia. *Swartz prodr.* 52. *obs.* 61.
Randia aculeata. *Linn. spec.* 214. *Reichb.* 427.
Brown. jam. 143. t. 8. f. 1. *Sloan. jam.* 1. 40.
t. 11. f. 4. (*Lycium*.)
β. R. mitis. *Mill. dict.* *Sloan. jam.* 2. t. 161. f. 1.
(Cacao.)
Thorns opposite, both they and the flowers shorter than the leaves, branches smooth.

DESCRIPTIONS, &c.

[1. Stem decumbent, smooth, thickness of a reed, about a foot high, putting out roots at bottom. Branches opposite, tubercled with rudiments of leaves, flexuose, upright. Leaves assembled at the ends of the branches, opposite, subsessile, entire, marked with parallel nerves, smooth, upright, from an inch to two inches in length. Stipules between the leaves, ovate, obtuse, sheathing, membranaceous. Flowers solitary, subsessile; at the ends of the branches. Calyx angular, smooth, five or six-parted: divisions lanceolate, vertical, only half the length of the tube of the corolla, which is white, leathery, and usually double: the divisions of the border oblong, obtuse, flat. It differs from *G. florida* in being many times smaller, with a slender, decumbent, rooting stalk, and narrow leaves, of an elliptic or lanceolate form, drawn to a point at each end. It is commonly cultivated in Japan, where it flowers in June and July^a.]

2. Stem large and woody, sending out many branches, which are first green, but afterwards the bark becomes gray and smooth; the branches come out by pairs opposite, and have short joints; the leaves also are opposite, close to the branches; they are five inches long, and two inches and a half broad in the middle, lessening to both ends, terminating in a point; they are of a lucid green, having several transverse veins from the midrib to the borders; they are entire, and of a thick consistence. The flowers are produced at the ends of the branches, fitting close to the leaves. When fully blown, the double flower is as large as a middling Rose. It has a very agreeable odour, on the first approach something like that of the Orange flower, but on being more closely smelt to, like the common double white Narcissus.

[There are hedges of it in Japan, and the Japanese are very fond of it near their houses, and in the walks of their gardens. Both in Japan and China the fruit is used for dyeing yellow^b. The mucilage pressed out with the seeds produces a fine yellow; that from the seeds only is lighter, but tinges water of a lively yellow, and is said to dye silk of a deep orange, or even scarlet, but not the deep China scarlet.

It varies with single and double flowers: the former has from five to nine divisions of the corolla, and stamens.—Native of the Cape of Good Hope, CöchinChina, China, Japan, Suratte, Amboina, and the South-sea islands. Introduced about 1754, by Captain Hutchinson^c, of the Godolphin Indianman, who found it near the Cape of Good Hope, being attracted by the great fragrance of the flowers. He presented it to Richard Warner, Esq. of Woodford in Essex, in whose curious garden it continued flowering. [Mr. James Gordon of Mile-end propagated it from cuttings in 1757^d. It flowers in July and August.

3. This is a tree, about two fathoms in height, smooth, and branching very much. Branches alternate, round, having rings on them from the rudiments of leaves, ash-coloured, smooth, erect, branch-

letted. Leaves in whorls of three or four, acuminate to both ends, entire, concave, somewhat waved, marked with parallel nerves, smooth, having hairy glands in the axils of the nerves on the lower surface, spreading; unequal, longer than the internodes, two inches long and more. Petioles short, gradually widening into the leaf, callous underneath, smooth, an inch long. Stipules intrafoliaceous, sheathing, blunt, membranaceous. Flowers on the branchlets terminating, solitary, sessile, erect. Calyx cylindric, widening at top, smooth, opening obliquely at top, crowned with from four to six petioled, cowed leaflets, villose within, and moistened with honey juice, one-third only of the length of the tube. Corolla white, coriaceous: tube a little incurved, obscurely streaked, widening a little gradually, very smooth: border from seven to nine-parted; parts ovate, very blunt, reflex at the edge, quite entire, imbricate, spreading very much, villose at the mouth, and grooved. Anthers seven or eight, but most commonly nine: sometimes the border is ten-parted, with the same number of anthers. Germ flat, crowned with rounded, horned tubercles, and smooth. Style filiform and smooth below; above club-shaped, villose, longer than the tube of the corolla. Stigma obliquely truncate, grooved. Berry ovate, somewhat wrinkled, smooth, greenish, turning white, one-celled, five-valved; the size of a hen's egg, continuing several years without opening or falling; having a woody hard bark, and scarcely any pulp. Seeds lenticular, imbricate, one in each plait^e. It is not only very clear that this plant is of the genus *Gardenia*, but it resembles *G. florida* exceedingly in the stalk and leaves; the latter are frequently in whorls, and the nerves on the lower surface have glands. There is little else to separate them but the long funnel-form calyx, appendicled below the tip^f.

Native of the Cape of Good Hope, and introduced in 1773, by Sir James Cockburn, Bart.^g

4. Native of the East-Indies: introduced in 1787, by Richard Anthony Salisbury, Esq.^h

5. This resembles *G. florida* in the size and form of the border of the corolla; the tube of the calyx is longer, more filiform, and covered with more slender hairs. A gum-resin very much like Gum Elemi exudes from the clefts of the bark, and from the leaves. Native of Ceylon. Found there by Koenigⁱ.

6. The form of the calyx, the contorted corolla, the sessile anthers and their manner of insertion, the large two-lobed stigma, the dry bilocular berry, the disposition of the seeds, and the habit of the herbaceous part, all unite to persuade us that this plant is a true species of *Gardenia*.

It is shrubby, with round branches, rough with hairs. Leaves opposite, on very short petioles, an inch in length, and smooth. Stipules between the leaves, solitary, dilated at the base, subulate. Flowers axillary, and at the ends of very short branches, solitary, sessile. Calyx bell-shaped, rough with hairs: the divisions compressed, subulate; the sinuses rounded. Corolla white: tube elongated, filiform, bent upwards at the base, and then becoming straight, rough with hairs; border only half the length of the tube, the segments ovate, acuminate, fleshy. Anthers inserted above the throat, oblong, upright. Berry oval, with a woody bark. Seeds oval, imbricate, in two rows in each cell.—Native of South-America^k.

7. This is a thornless shrub, according to Swartz, with oblong-lanceolate leaves, axillary many-flowered peduncles, and salver-shaped corollas, with a short tube. It differs from the other *Gardenias* principally in the form of the corolla, which varies much in this genus. Leaves lanceolate, sinuose, veined, quite entire, sessile. Peduncles many-flowered, racemed. Corolla funnel-form, with a short tube, and a five-cleft, equal, spreading border. Berry ovate, fleshy, acuminate at both ends, and as it were

^a Thunberg.^b Ibid.^c Hort. kew.^d Ellis.^e Thunberg.^f Ibid.^g Linn. suppl.^h Linn. suppl.ⁱ Hort. kew.^k Ibid.

truncate, two-celled. Seeds angular, depressed, nestling in the pulp. Native of South America¹.

8. Stem arboreous, erect, branching very much, a fathom and half in height. Branches and branchlets opposite, somewhat angular, striated, rugged, erect, ferruginous. Leaves opposite, on very short petioles, acute, entire, nerved, smooth, bright green above, paler beneath, evergreen, having hairy glands in the axils of the nerves on the lower surface. Stipules intrafoliaceous, awl-shaped, short. Flowers on the branchlets terminating, solitary, sessile. Calyx cylindric, obscurely five-cornered, smooth on the outside, hairy within, one-third of the length of the corolla; segments filiform, acute. Corolla subcampanulate, yellowish-white on the outside, dusky yellow within, with purple spots; segments of the border ovate, acuminate, reflex. Anthers seldom six, with a six-cleft calyx and corolla. Germ slightly convex, unequal, angular, smooth. Style filiform, thickening gradually, white, almost the length of the corolla. Berry ovate, fleshy, angular, with about twelve obscure lines, smooth, two-valved, one-celled, pulpy, the size of a small pear, black when ripe, opening on one side, and falling from the tree when dry; pulp soft, like that of the Tamarind^m.

The wood of this is very hard. Flowers white, smelling very sweet, especially during the night. Native of the Cape of Good Hopeⁿ. Introduced in 1774, from Mr. Francis Masson^o.

9. Stem shrubby. Branches round, smooth, spiny, rigid. Spines supraaxillary, commonly opposite, decussated, spreading, an inch long. Leaves from buds below the spines, several, subsessile, ovate, obtuse, entire, smooth, spreading, unequal. Stipules minute, bristle-shaped. Flowers axillary, solitary. Calyx bell-shaped, hirsute on the outside. Corolla funnel-shaped, white. Native of China near Macao^p.

10. This is a very thorny shrub, with very stiff, round, smooth branches. Thorns in pairs, an inch long, simple, horizontal, decussated, straight, very stiff, smooth, coming out above the origin of the twigs. Leaves obovate, entire, very smooth, opposite, a little smaller than those of Box. Flowers solitary, small, on short pedicels, at the end of each twig. Calyx bell-shaped, smooth, divided into five ovate, spreading segments, marked with nerves. Corolla leathery, scarcely larger than the calyx, hairy on both sides, but very much so on the outside; the segments of the border rounded or obovate.—Native of the East-Indies, about Madras, in bushy places. Found by John Gerard Koenig, M.D. Introduced in 1777, by Sir Joseph Banks, Bart^q.—This is a different plant from *G. spinosa* of Thunberg, which is a native of China, and has the calyx externally, with the corolla very hairy; whereas in this they are smooth. See n. 9.

11. Stem shrubby. Branches round, villose, spiny. Branchlets capillary, few, rough with hairs, spiny. Spines suprafoliaceous, opposite, acute, from erect-spreading. Leaves from the buds below the spines opposite, ovate, acute, entire, smooth, nerved, spreading, on petioles a line in length. Flowers axillary, two or three, the size of a grain of rice. Calyx truncate, smooth, much shorter than the corolla; which is subcampanulate, with ovate, acute, reflex segments. Style capillary, white, the length of the corolla. Stigma globular. Native of China and the island of Ceylon.

12. Stem shrubby. Branches round, smooth, ash-coloured, spiny, climbing. Spines suprafoliaceous, decussately opposite. Leaves from the buds below the spines aggregate, ovate, bluntish, entire, smooth, spreading, unequal, on very short petioles. Stipules bristle-shaped. Flowers axillary, solitary. Peduncles filiform, one-flowered, smooth. Calyx subcampanulate, smooth, one-fourth of the length of the tube of the corolla; segments lanceolate, erect.

Corolla funnel-form, white, smooth; tube cylindric, straight; segments of the border lanceolate, spreading. Style filiform, the length of the tube. Stigma club-shaped. Native of China, near Macao^r. According to Retzius, it is a shrub very much branched both oppositely and alternately. Spines short. Leaves opposite and scattered, ovate, quite entire, the same size as in *G. dumetorum*. Flowers at the ends of the twigs, usually solitary, peduncled, altogether like those of *Jasminum odoratum*, but the stamens and pistil as in *Gardenia*. It has the calyx of Jasmin, but more leathery, as is also the corolla.

13. A shrub with brown squarish branches, the twigs short and growing by pairs, having leaves and two thorns at the end. Leaves elliptic, obtuse, smooth. Corolla thick, leathery, the segments rounded, hollow, the tube short. Calyx fleshy, the five toothlets short, blunt. Native of the East-Indies in marshes. Found there by Koenig^s.

14. This is a small tree, about ten feet high, and very seldom more than three inches in diameter, frequently branching very near the ground. Branches round, smooth, brachiate; the longer ones requiring some support; the extreme branchlets are armed with four awl-shaped, acuminate, strong, spreading, cruciate thorns. Leaves subovate, attenuated to both ends, acute, entire, veined, sometimes wrinkled, subhirsute on both sides, petioled. Flowers sessile, commonly four together from the end of each twig, extremely odorous. Calyx smoothish, deeply five-cleft; segments varying much in form and proportion, but not in number. Corolla white, the tube longer than the segments. Stigma sometimes globular and twin, but more frequently split into two oblong segments. Berry not streaked, crowned with a part only of the calyx, at first yellowish, then brown. Native of South America and the West-India islands^t.

15. Spines of the branches decussated, leaves roundish, teeth of the calyx lanceolate-subulate, corolla salver-shaped. Its affinity to several of the species proclaim it to be of this genus. The berry is two-celled, and even when ripe, a very thin partition yet remains. The form of the corolla varies extremely in this genus. The *mitis*, or thornless *Randia*, seems to be the same, in a more advanced age; when it is common for trees and shrubs to lose their thorns^u.

Browne calls it the Indigo-berry, and says that it is a small shrub rising by a branched stalk, and shooting commonly to the height of seven or eight feet; the main stem tough and hard; the branches somewhat prickly at the ends; the leaves of an oval form, and growing in tufts. The pulp of the berries, which are generally numerous on the smaller branches, is very thick, and stains paper or linnen of a fine fixed blue colour.]

Native of the West-Indies. Introduced before 1733 by William Houstoun, M.D. who found it near La Vera Cruz, and gave it the name of *Randia*, in honour of Mr. Isaac Rand, who was a curious botanist. It had also been discovered by Sir Hans Sloane in the island of Barbadoes.

PROPAGATION AND CULTURE.

2. The common *Gardenia* or Cape Jasmin is easily propagated by cuttings during the summer season, planted in pots, plunged into a moderate hot-bed, covered close with bell or hand-glasses; and screened from the sun. When they have taken root, they should be carefully parted, and put each into a separate small pot, plunging them again into the hot-bed, and shading them until they have taken new root, after which they should be gradually inured to the open air. Though the cuttings strike freely, and make strong shoots a year or two after, yet in three or four years they are apt to be stunted in their growth, the leaves turn pale and sickly, and the plants frequently die soon after.

[The other *Gardenias*, so far as we are yet ac-

¹ Plumier. ^m Thunberg. ⁿ Linn. suppl.
^o Hort. kew. ^p Thunberg.
^q Linn. suppl. Retz. obs. Hort. kew.

^r Thunberg.

^s Retzius.

^t Jacquin.

^u Swartz.

quainted with them, may be increased and treated in the same manner. Allowance being made for some, which are natives of hotter climates.]

15. The *Randia* is propagated by seeds, sown early in spring, in pots filled with light fresh earth, and plunged into a hot-bed of tanner's bark, observing to water the earth frequently but gently. When the plants come up, admit fresh air to them every day when the weather is warm, and refresh them often with water. In a month's time they will be fit to transplant; shake them carefully out of the pots, plant each in a small pot filled with light fresh earth, and plunge them into the hot-bed again, screening them from the sun until they have taken new root; after which they must have air and moisture according to the warmth of the season. The plants may remain in the hot-bed till towards Michaelmas, when the nights begin to be cold; then they should be removed into the stove, and if they are plunged into the bark-bed, it will greatly forward their growth; though they will live in the dry stove, in a moderate temperature. During the two first seasons, whilst the plants are young, keep them constantly in the stove, washing their leaves whenever they contract filth; after they have obtained strength, expose them in summer to the open air for two or three months, in a warm situation; but in winter place them in the stove, in a moderate warmth.

The leaves continuing green throughout the year, this is a valuable plant for the stove.

GARIDELLA. (So named by Tournefort in honour of Pierre Garidel, M.D. Physician at Aix in Provence. Author of *Histoire des Plantes qui naissent en Provence*; 1719, with many figures.)

Lin. gen. n. 571. Reich. 620. Schreb. 778.

Tournef. 430. Juss. 233. Gertn. t. 118.

Class. 10. 3. Decandria Trigynia.

Nat. order of *Multifloræ*.—*Ranunculaceæ*. Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-leaved, small: *leaflets* ovate, acute, deciduous.

COR. *Petals* none, unless the calyx be taken for them. *Nectaries* five, long, equal, two-lipped: *outer lip* bifid, flat; *divisions* long, linear, blunt: *inner lip* shorter, simple.

STAM. *Filaments* usually ten, subulate, shorter than the corolla. *Anthems* upright, blunt.

PIST. *Germ*s three, ovate, upright, acuminate, connected. *Styles* scarcely any. *Stigmas* simple.

PER. *Capsules* three, superior, connected, oblong, acuminate, compressed, one-celled, two-valved: the inner future more convex.

SEEDS several, short.—About twelve in each cell, ovate-acuminate, wrinkled, black or brown.

Obs. It approaches very near to *Nigella*. The capsules are so closely united, as to seem one three-celled, three-valved capsule.

ESSENTIAL CHARACTER.

Cal. five-leaved, like petals. Nect. five, two-lipped, bifid. Caps. three, connected, containing many seeds.

SPECIES.

1. *Garidella Nigellastrum*. Fennel-leaved *Garidella*.

Lin. spec. 608. Reich. 2. 368. hort. cliff. 170.

upf. 108. Garid. prov. 203. t. 39. Allion.

pedem. n. 1681. Villars dauph. 3. 584. Gertn.

fruct. 2. 175.

Nigellastrum raris & *foeniculaceis foliis*. Magn. hort. t. 143.

Nigella cretica fol. foeniculi. Baub. pin. 146. Mor.

bist. 3. 516. f. 12. t. 18. f. 6. Park. theat.

1376. 6. Raii hist. 1071. 9.

Melanthium peregrinum f. creticum. Pona bald. 46.

DESCRIPTION, &c.

This is an annual plant, which rises with an upright stalk a foot high, dividing into several slender branches, having very fine-cut leaves, like those of Fennel, at their joints; the stalks are terminated by one small flower, of a pale herbaceous colour.

[Native of the South of France, where it was first discovered by Mons^r Garidel in 1692. It is found also in Italy.

First cultivated here in 1748^a.] It flowers in June and July, and the seeds ripen in September.

PROPAGATION AND CULTURE.

This plant is propagated by seeds sown in autumn on a border of light fresh earth: when the plants come up, weed, and thin them to the distance of four or five inches; or if the seeds be permitted to scatter, the plants will come up without farther care. They do not well bear transplanting.

[GARLICK. See *Allium fativum*.

GARLICK-PEAR. See *Crataeva*.

Garro de Malaca. See *Aquilaria*.

GAROSMUS. See *Chenopodium*.]

GAULTHERIA. (So named by Kalm from Gaultbier, a physician and botanist of Canada.)

Lin. gen. n. 551. Reich. 595. Schreb. 749.

Gertn. 63. Juss. 161.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Bicornes*.—*Ericæ*. Juss.

GENERIC CHARACTER.

CAL. *Perianth* double, approximating, permanent: *outer* two-leaved, shorter; *leaflets* half-ovate, concave, obtuse; *inner* one-leaved, five-cleft, bell-shaped; *segments* half ovate.

COR. one-petalled, ovate, half-five-cleft; *border* small, rolled back.

Nectary of ten subulate, upright, very short bodies, or glands, surrounding the germ within the stamens.

STAM. *Filaments* ten, subulate, bent in, shorter than the corolla, inserted into the receptacle. *Anthems* two-horned, with the horns bifid.

PIST. *Germ* roundish, flattened. *Style* cylindric, the length of the corolla. *Stigma* obtuse.

PER. *Capsule* roundish, obtusely five-cornered, flattened, five-celled, five-valved, opening into five parts at the top, covered all round with the inner perianth, changed into a roundish, coloured berry, pervious at the top.

SEEDS very many, subovate, angular, bony.

ESSENTIAL CHARACTER.

Cal. outer two-leaved, inner five-cleft. Cor. ovate.

Nect. with ten dagger points. Caps. five-celled, covered with the inner calyx, now become a berry.

SPECIES.

1. *Gaultheria procumbens*. Trailing *Gaultheria*.

Lin. spec. 565. Reich. 2. 297. Kalm. amœn.

3. 14. t. 1. f. 6. Dubam. arb. 1. 286. t. 113.

Gertn. fruct. 306.

Anonyma pedunculis arcuatis. Cold. noveb. 98.

Leaves alternate, ovate, entire, stem shrubby, trailing.

[2. *Gaultheria antipoda*.

Forst. fl. austr. n. 196.

Leaves scattered, roundish, serrate-toothed, stem shrubby, diffused.

DESCRIPTION, &c.

1. This plant has the appearance of *Pyrola* or *Vaccinium*, with a creeping root. It is a small, evergreen, trailing shrub, a span high, and scarcely branched. Leaves terminating the stem, three or four, obovate, smooth, coriaceous, spreading, with a few acuminate serratures. Flowers solitary, axillary, pendulous, peduncled. Inner calyx and corolla white^b,] or of an herbaceous colour, and rarely succeeded by fruit in England.

[The fruit is red on the outside and fleshy, resembling a berry; the capsule within is very thin, and tubercled with the protuberance of the seeds: the partitions also within are very thin, and are fastened to the axis and the furrows of the shell: there are five receptacles, which are fleshy, flattened, bowed, fixed at the base, but loose in the other parts, or connected with the axis of the fruit by a very thin membrane. Seeds very small, smooth, shining, ferruginous^c.

Native of Canada, on a dry, sterile, sandy soil. The leaves are used there in an infusion, instead of Tea^d.

Cultivated in 1768, by Mr. Miller^e.

2. Native of New Zealand^f.]

^a Hort. kew. from Mill. dict. edit. 5.

^b Linn. amœn.

^c Gærtner.

^d Linn. amœn.

^e Hort. kew.

^f Forster.

PROPAGATION AND CULTURE.

1. The method of preserving this plant in a garden, is to set it in a pot, filled with loose undunged earth, placing it in the shade, and frequently watering it. Thus the plant may be kept alive two or three years, and bear flowers, but not fruit.

GAURA. (From *Gavros*, *superbus*.)

Lin. gen. n. 470. Reich. 506. Schreb. 638.

Gertn. 127. Juss. 319.

Class. 8. 1. Octandria Monogynia.

Nat. order of *Calycanthemæ*.—*Onagræ*. Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, superior, deciduous. *Tube* cylindric, long, thicker at the base, containing four oblong glands growing to it. *Border* four-cleft; *divisions* oblong, acute, reflex.

COR. *Petals* four, oblong, rising towards the upper lip, equal; with narrow claws, placed on the tube of the calyx.

STAM. *Filaments* eight, filiform, broader at top, straight, shorter than the corolla: a nectareous gland of a conical form within the base of each. *Anthers* oblong, versatile.

PIST. *Germ* oblong, inferior, four-celled, many-seeded: the seeds fixed to a columnar receptacle. *Style* filiform, length of the stamens. *Stigmas* four, columnar, ovate, spreading.

PER. *Drupe* ovate, four-cornered, the corners flattened.—(dry, often with one cell only, and one seed, with the vestiges of the partitions and the abortive seeds. G.)

SEED. *Nut* with one seed, oblong, angular.—(solitary, one or four, subovate, narrowed at top, convex on one side, angular on the other, of a yellowish bay colour, with a brown callus at the base. G.)

ESSENTIAL CHARACTER.

Cal. four-cleft, tubulous. Cor. four-petalled, rising towards the upper side. Nut inferior, one-seeded, four-cornered.

SPECIES.

1. *Gaura biennis*. *Biennial Gaura*.

Lin. spec. 493. Reich. 2. 150. amæn. 3. 26. Aët.

holm. 1756. p. 222. t. 8. Giseck ic. fasc. 1.

n. 8. Pluk. amalb. t. 428. f. 2. Gertn.

fruct. 2. 205.

DESCRIPTION, &c.

This is a biennial plant. Stem four or five feet high, sending out several branches. Leaves oblong, smooth, pale-green, sitting pretty close. Flowers in close tufts at the ends of the branches, pale rose-coloured; appearing in september, and when the autumn proves favourable, ripening the seeds towards the end of october.

[*Gaura* agrees with *Spathelia* and *Nitraria* in having the shell of the fruit valved at the end. If there be only one seed, then it is oblong, and much acuminate; but Linneus was mistaken in supposing this to be the natural number.

Native of Virginia and Pennsylvania. Introduced in 1762, by Mr. James Gordon^b.]

PROPAGATION AND CULTURE.

If the seeds are sown on an open border soon after they are ripe, they will more certainly succeed than when they are sown in the spring. When the plants come up, keep them clean from weeds, and thin them, if they are too close: transplant them in autumn where they are to stand, and support the branches to prevent the autumnal winds from breaking them.

[*GELSEMINUM*. See *Bignonia*.

GAURA. See *Combretum* and *Guarea*.

GEASTER. See *Lycoperdon*.

GELALA. See *Erythrina*.

GELDER-ROSE. See *Viburnum*.

GELSEMINUM. See *Bignonia* and *Jasminum*.

GENIOSTOMA. (From *Γένιον*, a beard, and *στόμα*, a mouth; the mouth of the corolla being villose or bearded.)

Lin. gen. Schreb. n. 327. Forst. gen. 12. Juss. 420.

Class. 5. 1. Pentandria Monogynia.

^a Gærtner.

^b Hort. kew.

GENERIC CHARACTER.

CAL. *Perianth* inferior, turbinate, five-cleft, permanent: *divisions* short, sharp.

COR. one-petalled, funnel-form: *tube* widened, longer than the calyx: *throat* villose-bearded: *border* five-parted, spreading: *divisions* ovate, sharpish, the length of the tube.

STAM. *Filaments* five, short, in the throat of the corolla. *Anthers* oblong, standing out.

PIST. *Germ* ovate. *Style* filiform, longer than the tube. *Stigma* cylindric, blunt, grooved.

PER. *Capsule*? oblong, two-celled.

SEEDS very many, subangular, placed on a filiform receptacle.

ESSENTIAL CHARACTER.

Cal. turbinate, five-cleft. Cor. one-petalled, with a villose throat, and a five-parted border. Caps. oblong, two-celled, many-seeded.

SPECIES.

1. *Geniostoma rupestre*.

Forst. fl. austr. n. 103.

Native of the isle of Tanna in the South seas.

Found there august 9th, 1774.

GENIPA. See *Gardenia*.]

GENISTA. (From *genu*, the knee; either because it is flexible, like that joint; or because it is supposed to be good for pains there.)

Lin. gen. n. 859. Reich. 930. Schreb. 1167.

Gertn. t. 151. Juss. 353. Spartium. Tournef.

412. Genistella. Tournef. 413.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceæ* or *Leguminosæ*.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, small, tubular, two-lipped; upper lip two-toothed, more deeply divided; lower three-toothed, nearly equal.

COR. papilionaceous. *Banner* oblong, remote from the keel, the whole reflex. *Wings* oblong, loose, shorter than the others. *Keel* straight, emarginate, longer than the banner.

STAM. *Filaments* ten, connate, emerging from the keel. *Anthers* simple.

PIST. *Germ* oblong. *Style* simple, rising. *Stigma* sharp, rolled in.

PER. *Legume* roundish, turgid, one-celled, two-valved.

SEEDS solitary, usually kidney-form. (in *G. tinctoria* generally several.)

Obs. In this genus, *Spartium* and *Ulex*, there is a singular caruncle, of a substance different from the integuments, surrounding the umbilicus.

ESSENTIAL CHARACTER.

Cal. two-lipped, two and three-toothed: banner oblong, reflex downwards from the pistil and stamens.

SPECIES.

* *Unarmed*, or without thorns.

[1. *Genista canariensis*. *Canary Genista* or *Cytisus*.

Lin. spec. 997. syst. 645. Reich. 3. 404. hort. cliff. 355. 6. mat. med. 170.

Cytisus 1. *Clus. hist.* 1. 94.—*minoribus foliis, ramulis tenellis villosis*. *Baub. pin.* 390.

β. *Cytisus canariensis*, &c. *Comm. hort.* 2. 103. t. 52. *Séba thes.* 2. t. 4. f. 6, 7. *Pluk. alm.* t. 277. f. 5.

Leaves ternate, pubescent on both sides, branches angular.]

2. *Genista candicans*. *Hoary Genista*, or *Montpelier Cytisus*.

Lin. spec. 997. syst. 645. Reich. 405. amæn. 4. 284. Gertn. fruct. 329.

Cytisus monspessulanus. Lin. spec. edit. 1. 740. Sauv. monsp. 191.

C. sylvestris candicans. *Cesalp. plant.* 113.

Leaves ternate, villose underneath, peduncles lateral, leafed, sustaining about five flowers, legumes hirsute.

[3. *Genista linifolia*. *Flax-leaved Genista*, or *Broom*.

Lin. spec. 997. Reich. 405. L'Herit. stirp. 184.

Cytisus argenteus linifolius insularum stoechadum. *Tournef. inst.* 648. *Garid. aix.* 147. *Ger. prov.* 485. 6.

Leaves ternate, sessile, linear, silky underneath.

4. *Genista*

4. *Genista triquetra*. *Triangular Genista or Broom*.
L'Herit. stirp. nov. 183. t. 88. ined. Ait. hort.
kew. 3. 14. Curt. magaz. 314.
Leaves ternate, the upper ones simple; branches three-
sided procumbent.]
5. *Genista sagittalis*. *Jointed Genista or Broom*.
Lin. spec. 998. Reich. 406. hort. cliff. 355.
Hall. belv. n. 353. Scop. carn. n. 872. Pollich
pal. n. 666. Crantz austr. 367. Jacqu. austr. 3.
t. 209. Mill. fig. t. 259. f. 2. D'Affo aragon.
n. 662. Villars dauph. 3. 420.
Genistella herbacea f. *Chamæ-Spartium*. Baub. hist.
1. 393. f. 3.
Chamæ-Genista sagittalis. Baub. pin. 395.—pan-
nonica. Cam. hort. t. 13.
Genistella montana Germanica. Park. theat. 230. 9.
Raii hist. 1725.
G. lagopoides major. Ger. 1135. f. 5. emac. 1317.
f. 5.
Branches ancipital membranaceous jointed, leaves ovate-
lanceolate.
6. *Genista tridentata*.
Lin. spec. 998. Reich. 406.
Genistella fruticosa lusitanica latifolia. Tournef. inst.
646.
Chamæ-genista peregrina. Dalech. hist. 176.
C. caule foliato. Baub. pin. 396.
β. *G. frutic. lusit. angustifolia*. Tournef. inst. 646.
Branches three-sided membranaceous somewhat jointed,
leaves three-cusped.
7. *Genista tinctoria*. *Common Dyer's Genista or Broom*.
Lin. spec. 998. Reich. 406. hort. cliff. 355. Fl.
suec. n. 634. mat. med. 170. Hudf. angl. 311.
With. 758. Lightf. 384. Relb. cant. n. 513.
Sowerby engl. bot. t. 44. Hall. belv. n. 350.
Scop. carn. n. 873. Pollich pal. n. 667. Neck.
gallob. 301. Crantz. aust. 366. Allion. pedem.
n. 1182. Krock. files. n. 1148. Fl. dan. t. 526.
Villars dauph. 3. 421.
G. tinct. germanica. Baub. pin. 395.
G. tinct. vulgaris. Clus. hist. 1. 101. Park. theat.
229. 7.
Genistella tinctoria. Ger. 1134. 1. emac. 1316. 1.
Raii hist. 1725. syn. 474.
Tinctorius flos. Baub. hist. 1. 391.
β. Rivin. tetr. t. 67. f. 1. *G. tinct. latifolia Lucensis*.
Baub. hist. 1. 393. 1. Raii hist. 1725.
Leaves lanceolate smooth, branches streaked round up-
right.
- [8. *Genista fibrica*. *Siberian Genista*.
Lin. syst. 645. Reich. 407. mant. 571. Jacqu.
hort. 2. t. 190.
Leaves lanceolate smooth, branches equal round up-
right.]
9. *Genista florida*. *Spanish Dyer's Genista or Broom*.
Lin. spec. 998. Reich. 407. D'Affo aragon. n. 663.
G. tinctoria hispanica. Clus. hist. 1. 101. Park.
theat. 229. 8. Raii hist. 1725.
G. tinct. frutescens, fol. incanis. Baub. pin. 395.
Genistella tinct. hisp. Baub. hist. 1. 392.
G. infectoria. Ger. 1134. f. 2. emac. 1316. f. 2.
Leaves lanceolate silky, branches streaked round, flowers
in bundles directed one way.
10. *Genista pilosa*. *Hairy Genista or Broom*.
Lin. spec. 999. Reich. 407. hort. cliff. 355. Fl.
suec. n. 635. Hudf. angl. 311. With. 759.
Engl. bot. t. 208. Rose elem. bot. app. 452. t. 3.
Hall. belv. n. 351. Scop. carn. n. 874. Pollich
pal. n. 668. Jacqu. austr. 3. t. 208. Krock.
files. n. 1149. D'Affo arag. n. 664. Villars
dauph. 3. 422.
Chamægenista 1. Clus. hist. 1. 103. 2.—pannonica.
Ger. 1132. 6. emac. 1313. 6.—fol. *Genistæ vul-*
garis. Baub. pin. Raii hist. 1725. 1.
Genistella pilosa. Baub. hist. 1. 393. 2.
Leaves solitary lanceolate obtuse, somewhat hairy; pe-
duncles the length of the calyx, standard hairy on the
outside, branches diffused.
- [11. *Genista humifusa*.
Lin. spec. 998. Reich. 408.
G. orientalis minima, &c. Tournef. cor. 44.
Leaves lanceolate ciliate, branches prostrate streaked
villose.]

** Thorny.

12. *Genista anglica*. *English Genista, Petty Whin, or*
Needle Furze.
Lin. spec. 999. Reich. 408. hort. cliff. 355.
Hudf. angl. 311. With. 759. Lightf. 384.
Relb. n. 514. Engl. bot. t. 132. Fl. dan. t. 619.
Villars dauph. 3. 422.
G. minor aspalathoides, f. G. spinosa anglica. Baub.
pin. 395. prodr. 157. Raii hist. 1731. syn. 475.—
—*G. spinosa minor germanica*. Baub. pin. 395.
affirmante Stokes, refragante Raio.
G. aculeata. Ger. 1140. 5. emac. 1320. 4.
Genistella. Dod. pempt. 760.—*aculeata*. Lob. ic. 2.
93. 2. Park. theat. 1004. 4.
Thorns simple awl-shaped, flowering branches abbrevi-
ated unarmed, leaves lanceolate acute, legumes
straightish.
- [13. *Genista germanica*. *German Genista or Broom*.
Lin. spec. 999. Reich. 408. Hall. belv. n. 352.
Scop. carn. n. 876. Pollich pal. n. 669. Crantz.
austr. 364. Krock. files. 1150. D'Affo aragon.
n. 665. Villars dauph. 3. 422.
G. spinosa minor germanica. Baub. pin. 395.
G. aculeata. Tabern. hist. 1102. Raii hist. 1728. 1.
Genistella spinosa. Rivin. tetr. t. 67. Fuchf. hist.
220.
Thorns compound, flowering branches elongated unarmed,
leaves lanceolate hairy, legumes oblong straightish.
14. *Genista hispanica*. *Dwarf prickly Genista or Broom*.
Lin. spec. 999. syst. 646. Reich. 408. Ger. prov.
483. 4. Gouan. monsp. 357. D'Affo aragon.
n. 666. Villars dauph. 3. 423. Jacqu. ic. 2.
collect. 2. 165.
G. sylvestris. Scop. carn. n. 875.
G. spinosa minor hispanica villosissima. Baub. pin.
395.
Genistella monspeliaca spinosa. Baub. prodr. 157.
Raii hist. 1728. 3.
G. montis ventosi spinosa. Baub. hist. 1. 400. Raii
hist. 1728. 2.
Spines decomposed, flowering branches unarmed, leaves
linear-lanceolate hairy, legumes ovate straight.
15. *Genista lusitanica*. *Portugal Genista or Broom*.
Lin. spec. 999. Reich. 409.
Genista-Spartium spinosum minus. Baub. pin. 394.
Park. theat. 1001. f. 1.
Scorpius secundus. Clus. hist. 1. 107. Baub. hist. 1.
403. f. 1. Raii hist. 1730. 2.
Stem leafless, thorns decussated.
16. *Genista scandens*. *Climbing Genista or Broom*.
Lour. cochinch. 428.
Spines simple, stem climbing, leaves bipinnate.
17. *Genista hirsuta*.
Vahl symb. 1. 51.
Genista-Spartium lusitanicum lanuginosum, aculeis
tridentatis longioribus munitum. Tournef. inst.
645.
Spines ternate decussated, leaves simple lanceolate, spikes
terminating hirsute.

DESCRIPTIONS, &c.

These are Shrubs or Undershrubs, some furnished with thorns or prickles, but many more species without them. In most of them the leaves are simple and lanceolate; but in some they are ternate; and one species is leafless. Stipules very small, or scarcely any. Flowers both at the ends of the branches and in the axils, sometimes solitary, but more frequently in spikes; with a yellow corolla.

1. Leaves obovate, somewhat mucronate; but the floral leaves subsessile, minute. Calyx trifid, the lowest segment three-toothed. Flowers in corymbs, five or six together. Legumes white-villose. The flowers are sweet^a.

Native of Spain and the Canaries. Cultivated in 1656, by Mr. John Tradescant, junior. It flowers from may to september^b.]

2. It rises to the height of seven or eight feet, sending out many slender branches, the upper parts of which, for more than a foot in length, send out small flowering-branches on their sides, supporting

^a Linn. syst.^b Hort. kew.

five yellow flowers, which appear in june and july : the seeds ripen in autumn.

[This resembles the foregoing species, but the leaflets are larger, oval, pubescent underneath only, sharp at both ends. The lateral shoots are short. Calyxes trifid. Flowers without scent. Floral leaves petioled; scarcely smaller than the others^c.

Legume oblong, narrow, compressed, obscurely swelling, brown with a white pile; the valves deeply excavated within, but scarcely so as to form distinct cells. Seeds four or six, somewhat kidney-shaped, black, smooth, subglucid; with a glandular, prominent, permanent rim, shaped like a crescent, and of a white or yellow colour, round the umbilicus^d.

Native of Spain, Italy, and France. Cultivated in 1748, by Mr. Miller^e.

3. This is a small shrub, with branches that are knotty from indentations left by the fallen leaves; the branchlets or shoots are leafy, angular, upright, filky. Leaves crowded, alternate; leaflets nearly equal, sharp, rolled back at the edge. Flowers in racemes at the ends of the branches. Calyx three-parted, the lowest segment trifid. Corolla like that of *G. tinctoria*. Legumes villose.

Native of the Levant and Spain^f.

4. Native of Spain, Italy, and France. Cultivated in 1748, by Mr. Miller. It flowers from april to june^g.

It is a hardy, evergreen, trailing shrub, producing a vast profusion of bloom, which renders it eminently conspicuous in may and june: it rarely produces seed. When tied up properly, and trained to a stake, it may vie with most of our ornamental shrubs^h.]

5. This sends out several stalks, which spread flat on the ground, and divide into many flat branches which are jointed, and their two sides are edged like a broad-sword; they are herbaceous but perennial. At each of the joints is placed one small sessile spear-shaped leaf, ending in a point, of a deep-green colour and smooth. The flowers are produced in close spikes at the ends of the branches, and are succeeded by short hairy pods, which contain three or four kidney-shaped seeds.

[The stalks above the leaves have three wings, under them two. There is one bracte below the peduncle, and two below the calyx. The banner is flat, rounded and emarginate; the keel in two parts; all the filaments connected; the pollen fulvous; the stigma somewhat villoseⁱ.

According to Haller, the banner is reflex, the wings a little shorter than the keel, which is equal in length to the banner: the tenth filament distinct from the rest: legumes black, flattened, containing four shining seeds, almost round: sometimes five or six, according to others.

Native of France, Germany, Switzerland, Savoy, Austria, Carniola, Italy, and Spain. I gathered it on Mont Saleve in Savoy. It flowers in june, sometimes in may, and ripens the seeds in september. Cultivated in 1758, by Mr. Miller^k.

6. Very nearly allied to the foregoing, but all the parts are larger, and the joints of the branches terminate in a lateral leaf, not entire, but three-cusped. Legumes woolly-white.

Native of Portugal^l.

Neither Miller's n. 6. nor that which he has figured in t. 138. can be this sort.

7. The roots creep far and wide. Stems many, angular, tough, from a foot to eighteen inches or two feet in height, sometimes more; branches subdivided, ending in short spikes of yellow flowers, with stipules between them. Leaves alternate, sessile, quite entire, acuminate, an inch long and two lines broad, smooth, except that the edges and the nerve underneath are slightly villose^m. The five clefts of the calyx are nearly equal. Standard of the corolla ovate, blunt (emarginate, Haller, acuminate, Scop.), wings oblong-oval, keel;

compressed: stigma a little knob. The lowest stamens longer than the others. Legume smooth, almost flat, containing several shining seeds shaped like those of the Lentilⁿ.

Native of most parts of Europe, in pastures and the borders of fields, particularly in dry gravelly or sandy soils: flowering in july. In the old writers it is called Base Broom, Green weed, or Green-wood, Dyer's-weed, and Wood-waxen.

When cows feed on it, their milk, and the butter or cheese made from it, are said to be very bitter.

A bright yellow colour may be prepared from the flowers; and for wool that is to be dyed green with woad, the dyers prefer it to all others.

A dram and half of the powdered seeds operates as a mild purgative. A decoction of the plant is sometimes diuretic, and therefore has proved serviceable in dropical cases. A salt prepared from the ashes is recommended in the same disorder^o.

8. This resembles the foregoing, but the stalks are neither streaked nor angular; they are scarcely marked with lines, nor are the stem and leaves at all villose. The leaves are something narrower. The flowers are very remote, in a kind of paniced spike.

Native of Siberia^p.]

9. This rises with woody stalks two or three feet high, sending out many taper channelled branches, which grow erect. Leaves small, alternate. Spikes of flowers terminating; succeeded by short pods, which turn black when ripe, and contain four or five kidney-shaped seeds.

[The calyxes as well as the leaves are filky and shining. D'Affo.

Native of Spain. Mr. Ray found it near Naples, by the Camaldules.—Cultivated in 1768, by Mr. Miller^q. It flowers in june and july, and the seeds ripen in autumn.

10. This differs from the Common Dyer's weed (n. 7.) in having the branches depressed on every side and procumbent; whereas that is upright^r.

Root long, running obliquely, and furnished with many small fibres. Stem a foot in length or more, much branched, tough; the old branches naked, the young ones cloathed with numerous, minute, oval or oval-lanceolate leaves, entire, smooth on the upper surface, beneath covered with long white silky hairs. Flowers in short spikes on the summit of the branches, on short hairy peduncles. Calyx divided into two nearly equal, acute, hairy, yellowish green lips. Corolla except the wings, hairy on the outer surface. Legumes hairy^s, containing many seeds, sometimes only two^t. The legumes are about an inch in length and turn black. To this we may add, that the leaves sometimes come out two, three, or four together^u.

Native of Sweden, Germany, Austria, Carniola, Hungary, Switzerland, France, Italy, and Spain. Not known to grow wild in England till it was discovered about Lachford, four or five miles from St. Edmund's Bury in Suffolk, by the late excellent Sir John Cullum, Bart. and Mr. Dickson. Mr. Woodward observes that Cavenham and other heaths near Bury appear yellow with the great plenty of these flowers; the flowering branches standing up: at other times it is difficult to find this shrub; the stem and branches being so closely procumbent, that they are often found even beneath the moss. It flowers in may.

11. Native of the Levant^x.

12. Stem much branched: branches tough, without leaves, furnished with extremely sharp slender thorns, from a quarter to half an inch in length; the shoots of the year grow in bundles on the summits of the old ones, and sparingly from the sides, bearing numerous, small, bright green, (glaucous on the young shoots, Ray) oval or lanceolate, (narrower and sharper on the older branches, Ray)

ⁿ Withering, Scopoli, Haller, Krockner.

^o Withering, Lightfoot, Krockner, Allioni.

^p Linn. mant.

^q Hort. kew.

^r Linn. suec.

^s Woodw. Mfs.

^t Reichard.

^u Rose and D'Affo.

^x Linn. spec.

^e Linn. syst.

^d Gartner.

^c Hort. kew.

^f Linn. spec.

^g Hort. kew.

^h Curtis.

ⁱ Scopoli.

^k Hort. kew.

^l Linn. spec.

^m Haller, Pollich, Krockner.

smooth, entire leaves, intermixed with soft spines, (scattered; but sometimes there are none; *Relb.*). Flowers small, pale yellow, few. Legumes short and broad, smooth, containing three or four seeds^y. Calyx yellow; stigma a small knob^z.

Native of Dauphiné, Denmark, and Britain, on heaths, usually in moist spongy ground. It flowers from the end of may to july.

13. Stems about a foot and half in height, very much branched. The old branches have no leaves, but strong, branched thorns; the younger ones are full of green hairy leaves, of an ovate-lanceolate form, the lower ones broader and rather ovate; they come out either in threes, or singly alternate: these also frequently have soft, tender, simple thorns. Flowers in a spike, long, and almost sessile: banner cordate, reflex, and thus much shorter than the keel, which is straight, and much longer than the wings. The tenth stamen distinct; pollen fulvous: the anthers in some flowers thick and white. Legume short, broad, hairy, black, having two, three, or four seeds^a.

Native of Germany; Switzerland, as about Lausanne, Bazil, &c. Savoy, on Mont Saleve, near Geneva, observed by Ray. Dauphiné, Piedmont, Carniola, Aragon; in dry woody places. It flowers the end of may or the beginning of june, and ripens its seeds in september. Introduced in 1773 by John earl of Bute^b.]

14. This rises with woody stalks, two or three feet high, sending out many taper channelled branches, which grow erect. Leaves small, alternate. Flowers yellow, in terminating spikes, succeeded by short pods, which turn black when ripe, and contain four or five kidney-shaped seeds.

[Very much allied to *G. germanica*^c, but is low, villose and procumbent; whereas that has an upright stem^d.

Gerard (in fl. gallo-prov.) cannot see in what this differs from *Genistella spinosa*, Rivin. He thus describes it.—Stems at bottom beset with branching spines ending in a yellow point, having no leaves, but putting forth at top, woolly, leafy shoots. Lower leaves lanceolate-linear, upper narrower, all hirsute and alternate. Rudiments of thorns, and of subulate leaves appear in the axils of the leaves. Flowers terminate the branches on very short peduncles: calyx tomentose; banner subvillose; stigma hooked.

Scopoli describes his *G. sylvestris* to have simple, streaked, soft stalks, somewhat villose. Leaves villose only underneath. Thorns soft; with branches not spreading. Flowers in bunches, loosely disposed in a spike about two inches long. Calyx never very hairy. Keel twice the length of the wings. He adds, that he and a friend, sent specimens of this plant to Linneus, who writ back that it was the same with his *G. hispanica*: but that he saw afterwards a very different plant under this name in the collection of Mygind; and which he describes.

Native of Spain, South of France, and Carniola. Cultivated in 1759, by Mr. Miller^e. It flowers in june and july, and the seeds ripen in autumn.

15. The woody stems are leafless, the younger stems are leafy, and covered with decussated spines.

Native of Portugal. Introduced in 1771, by Mrs. Primmet. It flowers from march to may^f.

16. This is a large shrub, with a very long, round, climbing, branched stem, having many short, recurved spines scattered over it. Leaves bipinnate, with ovate, entire, opposite leaflets. Flowers in large, loose, terminating, pendulous racemes. Corolla yellow, with an oblong reflex banner. Calyx of the same colour. Legume roundish, compressed, smooth, containing one large compressed seed.

Native of Cochinchina near rivers, mounting to the top of large trees, and covering them with its golden flowers^g.

17. This is a very thorny rigid shrub, with round branches, leafless below, extremely hirsute at top.

Leaves sessile, hirsute. Thorns from the axils, alternate, spreading very much, stout, decussated, an inch long, yellowish at the tip, smooth, very finely streaked, having a shorter horizontal thorn on each side at the base. Spike of flowers from the ends of the branches, an inch in length, imbricate, very hirsute. Bractes in threes at the base of the flowers, shorter than the calyx, hairy, lateral, linear, the middle one lanceolate-acuminate. Calyx hairy, with awl-shaped segments. Corolla yellow, with a hairy banner.

Native of old Castille^h.]

PROPAGATION AND CULTURE.

All these shrubs are propagated by seeds, which, if sown in the autumn, will succeed much better than if sown in the spring, and a year will be thereby saved; as these plants send out long, stringy, tough roots, which run deep into the ground, they do not bear transplanting well, especially if they are not removed young; therefore the best way is to sow a few seeds in those places where the plants are designed to remain, and to pull up all except the most promising plants as soon as they are past danger; after this the plants will require no other culture, but to keep them clean from weeds: but where this cannot be practised, the seeds may be sown thin upon a bed of light earth, and when the plants come up, they must be kept clean from weeds till the following autumn, when the plants should be carefully taken up and transplanted where they are designed to remain.

Many of the sorts are very hardy, and will grow in almost any soil or situation. Some of them (1, 2, 3, 4, 6, 9, 11, 14, 15, 17.) must have a sheltered situation and dry soil, to carry them through our winters.

[The first, third, and sixteenth require the protection of a green-house. The sorts which do not produce seeds here may be increased by layers.

GENISTA. See *Aspalathus*, *Crotalaria*, *Hedysarum*, *Indigofera*, *Sophora*, *Spartium*.

GENISTA AFRICANA. See *Aspalathus*, *Borbonia*, *Liparia*, *Sophora*, *Spartium*.

GENISTA-SPARTIUM. See *Anthyllis*, *Genista*, *Hedysarum*, *Pisoralea*, *Ulex*.]

GENISTA SPINOSA. See *Hedysarum*, *Ulex*.

GENISTÆ AFFINIS. See *Pisoralea*.

[GENISTELLA. See *Aspalathus* and *Genista*.

GENTIAN. See *Gentiana*.]

GENTIANA. (From *Gentius* King of Illyria.)

Lin. gen. n. 322. Reich. 352. Schreb. 450. Tourn. 40. Juss. 141. Gertn. t. 114.—Centaurium minus. Tournef. 48. Chironia: Curt. 4. 22.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Rotaceæ*.—*Gentianæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted, sharp: divisions oblong, permanent.

COR. Petal one, tubular at bottom, imperforate, at top five-cleft, flat, withering, various in form.

STAM. Filaments five, subulate, shorter than the corolla. Anther simple.

PIST. Germ oblong, cylindric, length of the stamens. Styles none. Stigmas two, ovate. (Germ superior; style simple, or two sessile stigmas, G.)

PER. Capsule oblong, columnar, acuminate, slightly bifid at the tip, one-celled, two-valved.

SEEDS numerous, small, fixed all round to the walls of the capsule, G.) Receptacles two, each fastened longitudinally to a valve.

OBS. The figure of the fruit is constant: but both that and the number in the flower varies much in the different species.

Some species exclude a fifth part of the number in the flower.—One adds three parts of the number in the flower.—One species has the neck of the corolla spreading: a second has the neck closed with hairs: a third has the

^y Woodw. Mfs. ^z Withering. ^a Haller, Scopoli, Pollich.

^b Hort. kew. ^c Linn. syst. ^d Villars.

^e Hort. kew. ^f Ibid. ^g Loureiro.

^h Vahl.

segments of the corolla ciliate: a fourth has a bell-shaped, upright, plaited border: in a fifth it is starred, with small segments interposed between the larger ones: some have a bell-shaped, and others have a funnel-shaped corolla, &c.

ESSENTIAL CHARACTER.

Cor. monopetalous. Caps. superior, two-valved, one-celled; with two longitudinal receptacles.

SPECIES.

* Corollas five-cleft or thereabouts, and somewhat bell-shaped.

[1. *Gentiana viscosa*. Clammy Gentian.

Ait. hort. kew. 1. 321.

Exacum viscosum. Smith ic. rar.

Corollas five-cleft, one-styled; panicles trichotomous, bractes perfoliate, leaves oblong three-nerved.]

2. *Gentiana lutea*. Yellow Gentian.

Lin. spec. 329. syst. 267. Reich. 1. 636. mat. med. 75. hort. cliff. 80. fl. lapp. 96. suec. n. 227. Hall. belv. n. 637. Scop. carn. n. 298. Krock. files. n. 381. Allion. pedem. n. 365. Villars dauph. 2. 511. Mill. fig. t. 139. f. 2. Sabbat. hort. 1. t. 10. Woodv. med. bot. 434. t. 156. Plenck, ic. t. 156.

Gentiana. Cam. epit. 415. Fuchs. hist. 200. Dod. pempt. 342.—major. Ger. 351. 1. emac. 432. 1. Park. parad. 350. n. 1. 351. f. 2. Raii hist. 716. —lutea. Baub. pin. 187. Park. theat. 402. f. 1. parad. 350. Mor. hist. 3. 484. f. 12. t. 4. f. 1.—vulgaris major Ellebori albi folio. Baub. hist. 3. 520.—fl. pallido. Barrel. ic. 63.

Asterias. Renealm. spec. 64. t. 63.

Corollas usually five-cleft wheel-shaped in whorls, calyxes spathaceous.

[3. *Gentiana purpurea*. Purple Gentian.

Lin. spec. 329. syst. 267. Reich. 637. Hall. belv. n. 639. Fl. dan. t. 50. Gunn. norv. n. 97. Krock. files. n. 382. Plenck, ic. t. 159.

G. major purpurea. Baub. pin. 187. Mor. t. 4. f. 3.—fl. purpureo & albo. Park. theat. 402. n. 1, 2.—1 Clusii. Ger. emac. 432. f. 2.—alia. Camer. epit. 416.—magna fl. purpureo & albo. Baub. hist. 3. 521. f. 1. Raii hist. 716.

Coilantha. Renealm. spec. 65.

Corollas usually five-cleft bell-shaped in whorls, calyxes truncate.

4. *Gentiana macrophylla*.

Pallas fl. ross. 108. t. 96. Gmel. sib. 4. 104. n. 72. t. 52.

Flowers five-cleft sessile in whorls, root-leaves equal to the stem which is almost naked.

5. *Gentiana campanulata*.

Lin. syst. 267. Jacqu. austr. 5. app. t. 29.

Corollas bell-shaped seven-cleft streaked unspotted, calyxes seven-cleft.

6. *Gentiana punctata*. Spotted-flowered Gentian.

Lin. spec. 329. syst. 267. Reich. 637. Allion. pedem. n. 349. Krock. files. n. 383. Jacqu. austr. 5. 42. t. app. 28.

G. major fl. punctato. Baub. pin. 187. Mor. t. 4. f. 2.—pallido fl. punctis distinctis. Clus. hist. 312. Raii hist. 717.—fl. pallido punctato. Park. theat. 402. n. 3.

Corollas bell-shaped five-cleft or thereabouts dotted, calyxes five-toothed.

7. *Gentiana pannonica*.

Lin. syst. 267. Jacqu. austr. 2. t. 136. Scop. carn. n. 297. Hall. belv. n. 638.

G. punctata. Jacqu. obs. 2. 17. t. 39.

Corollas bell-shaped six or seven-cleft dotted, calyxes usually six-cleft, stem-leaves lanceolate acuminate.

8. *Gentiana septemfida*.

Pallas fl. ross. 101. t. 92. f. 3.

Corollas seven and five-cleft, with ciliate segments interposed; leaves ovate-acuminate somewhat stem-clasping.]

9. *Gentiana asclepiadea*. Swallow-wort leaved Gentian.

Lin. spec. 329. Reich. 637. hort. cliff. 80. Hall. belv. n. 640. Jacqu. austr. 4. t. 328. Allion.

pedem. n. 350. Krock. files. n. 384. Pallas ross. 102. Villars dauph. 2. 524.

G. Asclepiadis folio. Baub. pin. 187. Park. parad. 350. n. 2. Baub. hist. 523. f. 1. Raii hist. 717.—major 2 Clusii. Ger. 351. f. 2. emac. 433. f. 3.

Dasytephana. Renealm. spec. 67. t. 68.

Corollas five-cleft bell-shaped opposite sessile, leaves stem-clasping.

[10. *Gentiana triflora*.

Pallas fl. ross. 105. t. 93. f. 1.

Corollas bell-shaped five-cleft aggregate-sessile, leaves linear, floral leaves four, two longer and two shorter.]

11. *Gentiana Pneumonanthe*. Marsh Gentian, or Calathian Violet.

Lin. spec. 330. Reich. 638. hort. cliff. 80. fl. suec. n. 228. Hudf. angl. 102. With. 261. Sowerby engl. bot. t. 20. Hall. belv. n. 641. Scop. carn. n. 295. Pollich pal. n. 256. Allion. pedem. n. 352. Krock. files. n. 385. Fl. dan. t. 269. Villars dauph. 525. Pallas ross. 105. Plenck, ic. t. 160.

G. palustris angustifolia. Baub. pin. 188. Raii hist. 719. syn. 274.—angust. autumn. major. Baub. pin. Mor. t. 5. f. 12.

G. autumnalis, *Pneumonanthe dicta*. Park. theat. 406. 1.

G. calathiana. Baub. hist. 3. 524. 1.

G. 4 Clus. hist. 1. 313. f. 2.

Pneumonanthe. Cord. hist. 1. 162. Lob. ic. 309. Ger. 355. emac. 438.

Cyana. Renealm. spec. 69. t. 63.

Corollas five-cleft bell-shaped; flowers peduncled; leaves linear.

[12. *Gentiana Saponaria*. Soap-wort-leaved Gentian.

Lin. spec. 330. Reich. 638. Gron. virg. 29. 40. Pluk. alm. t. 186. f. 1. Mor. hist. 3. 484. f. 12. t. 5. f. 4. Catesb. car. 1. t. 70.

Corollas five-cleft bell-shaped ventricose in whorls, leaves three-nerved.

13. *Gentiana villosa*.

Lin. spec. 330. syst. 267. Reich. 638. Gron. virg. 145. 40.

Corollas five-cleft bell-shaped ventricose, leaves villose.]

14. *Gentiana acaulis*. Dwarf G., or *Gentianella*.

Lin. spec. 330. syst. 267. Reich. 639. hort. cliff. 81. Hall. belv. n. 642. Scop. carn. n. 294. Jacqu. austr. 2. t. 135. Krock. files. n. 386. Villars dauph. 525. Gertn. fruct. 2. 159. Curtis magaz. t. 52. Clus. hist. 314. 5.

G. alpina latifolia, magno flore. Baub. pin. 187. prodr. 97. Raii hist. 718. Baub. hist. 3. 523. f. 2.

Gentianella verna. Park. parad. 352. n. 4. 351. f. 3.—major. Clus. hist. 315. Ger. emac. 436. f. 1. Park. theat. 403. f. 1. Mor. t. 5. f. 14.

β. *G. alpina angustifolia*, magno flore. Baub. pin. 187. Raii hist. 718. 1. Villars dauph. 2. 526. 7.

Thylacitis. Renealm. spec. 70. t. 68.

Corolla five-cleft bell-shaped higher than the stalk.

[15. *Gentiana nana*.

Lin. syst. 267. Jacqu. misc. 1. t. 18. f. 3. Allion. pedem. n. 360. Krock. files. n. 390.

G. brachiphylla. Villars dauph. 2. 528.

Corolla five-cleft bell-shaped bearded on the throat, stem-leaves ovate.]

16. *Gentiana exaltata*.

Lin. spec. 331. Reich. 639. Plum. ic. 81. f. 1.

Corollas five-cleft crowned notched, peduncle very long dichotomous terminating.

[17. *Gentiana decumbens*.

Lin. syst. 268. suppl. 174.

G. adscendens. Pall. ross. 106. t. 94. Gmel. sib. 4. n. 70. t. 51. f. A.

Corollas five-cleft bell-shaped, root-leaves lanceolate very long, stalk decumbent.

18. *Gentiana algida*.

Pallas fl. ross. 107. t. 95. itin. 3. app. 724. n. tab. L. f. 2. Gmel. sib. 4. 106. n. 75.

Corollas five-toothed bell-shaped sessile dotted, root-leaves in bunches.

19. *Gentiana*

19. *Gentiana faxosa*.
Lin. syst. 268. *suppl.* 175. *Forst. in act. holm.* 1777.
p. 183. *t.* 5. *fl. austr. n.* 132.
Corollas five-cleft bell-shaped, leaves spatulate.
20. *Gentiana montana*.
Forst. fl. austr. n. 133.
Corollas five-cleft bell-shaped, leaves heart-shaped sessile.
21. *Gentiana glauca*.
Pallas fl. ross. 104. *t.* 93. *f.* 2.
Corolla five-cleft bell-shaped; flowers sessile; leaves ovate-rounded.
- ** *Corollas five-cleft or thereabouts, and funnel-shaped.*
22. *Gentiana verna*.
Lin. spec. 331. *syst.* 268. *Reich.* 639. *Hall. helv.*
n. 644. *Scop. carn. n.* 291. *Krock. files. n.* 387.
Villars dauph. 2. 526.
G. alpina verna major. *Baub. pin.* 188. *Mor. t.* 5.
f. 13.
Gentianella verna minor. *Clus. hist.* 315. *Park.*
theat. 403. *n.* 3. *f.* 2. *Raii hist.* 718. 3.—*alpina*
verna. *Ger.* 354. *f.* 2. *emac.* 436. *f.* 2.—*quæ*
hippion. *Baub. hist.* 3. 527. *f.* 3.
Ericaile. *Renealm. spec.* 75. *t.* 68.
Corolla five-cleft longer than the stalk, root-leaves
crowded larger than the others.
23. *Gentiana pyrenaica*.
Lin. syst. 268. *Reich.* 640. *mant.* 55. *Gouan*
illust. 7. *t.* 2. *f.* 2.
Corolla ten-cleft equal, the outer divisions ruder than
the others.
24. *Gentiana altaica*.
Pallas fl. ross. 109. *t.* 97. *f.* 1.
Corolla ten-cleft, the clefts alternately smaller and ser-
riulate; stalk shorter than the flowers.
25. *Gentiana pumila*.
Lin. syst. 268. *Reich.* 640. *Jacqu. vind.* 215.
obs. 2. 29. *t.* 49. *fl. austr. 4. t.* 302. *Scop. carn.*
n. 290. *Villars dauph. 2.* 527.
Corolla five-cleft subserrate, leaves lanceolate-linear.
26. *Gentiana bavarica.* *Bavarian Gentian.*
Lin. spec. 331. *syst.* 268. *Reich.* 640. *hort. cliff.*
81. Hall. helv. n. 645. *Jacqu. obs.* 2. *t.* 71.
Cam. hort. 65. *t.* 15. *f.* 2. *Pallas ross.* 110.
Villars dauph. 2. 527.
Corolla five-cleft ferrate, leaves ovate obtuse.
27. *Gentiana aurea*.
Lin. spec. 331. *Reich.* 640. *Barrel. ic.* 3. *t.* 104.
f. 1.
Corollas five-cleft extremely acuminate, throat beardless
and awnless, branches opposite.]
28. *Gentiana nivalis*.
Lin. spec. 332. *Reich.* 641. *fl. lapp.* 95. *suec.*
n. 231. *Hall. helv. n.* 647. *ed.* 1. 475. *t.* 7.
f. 5. *Jacqu. vind.* 214. *Fl. dan. t.* 17. *Villars*
dauph. 2. 528.
G. alpina æstiva, centaureæ minoris folio. *Baub.*
pin. 188. *Raii hist.* 720. *n.* 10. *Mor. t.* 5. *f.* 3.
G. minima. *Lob. adv.* 131. *ic.* 310.
Corollas five-cleft, branches one-flowered alternate.
- [29. *Gentiana aquatica*.
Lin. spec. 332. *Reich.* 641. *amæn.* 2. 343. *Pallas*
ross. 109. *t.* 97. *f.* 2. *Gærtn. fruct.* 159. *Amm.*
rub. 4. *t.* 1. *f.* 1. *Gmel. sib.* 4. 110. *n.* 76.
Thunb. jap. 115. *Lour. cochinch.* 172.
Corollas five-cleft terminating sessile, leaves membra-
naceous at the edge.]
30. *Gentiana utriculosa*.
Lin. spec. 332. *Reich.* 641. *Hall. helv. n.* 646.
Scop. carn. n. 292. *Pollich pal. n.* 257. *Barr.*
rar. 18. *t.* 48. *Allion. pedem. n.* 361.
G. utriculis ventricosus. *Baub. pin.* 188.
G. cærulea cordata. *Col. ecphr.* 220. *t.* 221.
G. cær. calyce turgido pentagono. *Raii hist.* 721.
n. 12.
Corollas five-cleft salver-shaped, calyxes plaited and
keeled.
31. *Gentiana exacoides*.
Lin. spec. 332. *Reich.* 642. *Thunb. prodr. cap.*
47. Burm. afr. 208. *t.* 74. *f.* 5. *Pluk. alm.*
t. 275. *f.* 4. *Seba mus.* 1. *t.* 22. *f.* 7.

- Corollas five-cleft salver-shaped, calyxes membranaceous*
and keeled, stalk dichotomous, leaves cordate.]
32. *Gentiana Centaurium.* *Centory Gentian, or Lesser*
Centory.
Lin. spec. 332. *syst.* 268. *Reich.* 642. *mat. med.* 75.
hort. cliff. 81. *fl. suec. n.* 232. *Huds. angl.* 102.
Relb. cant. n. 192. *Hall. helv. n.* 648. *Scop.*
carn. n. 293. *Pollich pal. n.* 258. *Neck. gallob.*
133. Allion. pedem. n. 363. *Villars dauph. 2.*
529. Krock. files. n. 388. *Fl. dan. t.* 617.
Blackw. t. 452. *Sabb. hort. 1. t.* 99. *Berg.*
phyt. 37. *Plenck, ic. t.* 157.
Chironia Centaurium. *Curtis lond.* 4. 22. *With.*
237. Woodv. med. bot. 435. *t.* 157.
Centaurium minus. *Cam. epit.* 428. *Baub. pin.* 278.
Trag. 140. *Matth.* 655. *Fuch.* 387. *Dod.* 336.
Tabern. 1166. *Raii syn.* 286. *hist.* 1092. *Mor.*
hist. 2. *f.* 5. *t.* 26. *f.* 5.—*vulgare.* *Park. theat.*
272. f. 1.—*fl. purpureo & albo.* *Baub. hist.* 3.
353. 2.—parvum. *Ger.* 437. *emac.* 547. 1. *Lob.*
Erithræa. *Renealm. spec.* 77. *t.* 76.
β. G. ramosissima. *Villars dauph. 2.* 530. *Ger.*
prov. 311. *Vaill. par.* 32. *t.* 6. *f.* 1. *With.*
239. β.
Corollas five-cleft, stem dichotomous, pistil simple.
- [33. *Gentiana pulchella*.
Lin. syst. 269. *Stewart in act. holm.* 1783. *p.* 85.
t. 3. *f.* 8, 9.
Corolla five-cleft, tube elongated, style simple, stalk
quite so.
34. *Gentiana verticillata*.
Lin. syst. 269. 26. *suppl.* 174. *Vahl symb.* 3. 46.
Corollas quinquefid in whorls eight together.
35. *Gentiana maritima.* *Procumbent Sea Gentian.*
Lin. syst. 269. *Reich.* 643. *mant.* 55. *Ger. prov.*
311. n. 8. *Gouan fl. monsp.* 35. *n.* 7. *Pallas*
ross. 111.
Centaurium luteum pusillum. *Baub. pin.* 278.
Mor. f. 5. *t.* 26. *f.* 3.
C. lut. novum. *Column.*
C. lut. minus latif. & angustifolium non perfol.
Bocc. mus. 2. *t.* 76. *Barrel. ic.* 468, 469.
Corollas five-cleft, styles twin, stem dichotomous few-
flowered.]
36. *Gentiana spicata*.
Lin. spec. 333. *Reich.* 643. *Sauv. monsp.* 132.
Centaurium minus spicatum album. *Baub. pin.*
278. prodr. 130. *ic.* *Raii hist.* 1092. *n.* 2. *Mor.*
hist. *f.* 5. *t.* 26. *f.* 6.
C. minus album. *Tabern.* 780.
β. C. min. spic., fl. rubello. *Tournef. inst.* 122.
Flowers alternate sessile, corollas five-cleft.
- [37. *Gentiana verticillaris*.
Lin. spec. 333. *syst.* 269. *n.* 29. *edit.* 13. *n.* 19.
Reich. 643. *Retz. obs.* 2. *n.* 39.
Centaurium minus ad alas floridum. *Plum. ic.* 81.
f. 2. *Burm. afr.* 206. *t.* 74. *f.* 3.
Flowers in whorls, corollas five-cleft, stalk extremely
simple.
38. *Gentiana quinqueflora*.
Lin. spec. 333. *Reich.* 644. *Fl. dan. t.* 344?
Corollas five-cleft, stalk acute-angled, leaves ovate stem-
claspings.
39. *Gentiana scilloides*.
Lin. syst. 269. *suppl.* 175.
Corollas five-cleft, bractes in pairs, stalk one-flowered
prostrate branched, leaves obovate obtuse three-nerved.
40. *Gentiana aphylla*.
Lin. spec. 334. *Reich.* 644. *Jacqu. amer.* 87.
t. 60. *f.* 3. *piet.* 46. *t.* 89.
Corolla five-cleft salver-shaped, stalk leafless.
41. *Gentiana Amarella.* *Autumnal Gentian.*
Lin. spec. 334. *Reich.* 644. *mat. med.* 76. *hort.*
cliff. 81. *fl. suec. n.* 229. *Huds. angl.* 103.
With. 262. *Relb. cant. n.* 193. *Engl. bot.*
t. 236. *Hall. helv. n.* 651. *Pollich pal. n.* 259.
Leers herb. n. 178. *Krock. files. n.* 389.
Villars dauph. 2. 530. *Gunn. norv.* 95. *Fl. dan.*
t. 328. *Gmel. sib.* 4. 106. *n.* 74. *Pallas ross.*
104. Barrel. ic. 510. 1. *Plenck, ic. t.* 158.
Gentianella pratensis fl. lanuginoso. *Baub. pin.* 188.
Baub. hist. 3. 526. 2, 3. *Mor. t.* 5. *f.* 3.—*fugax*
minor.

- minor. *Ger.* 354. 1. *emac.* 437. 3.—autumnalis
Centaureæ minoris fol. *Park. theat.* 406. 3.—
fugax 2. & 4. *Clusii*, Raio affirmante.
Opfantha. Renealm. spec. 71.
β. *G. fugax autumnalis elatior, Centaurii minoris*
fol. *Raii syn.* 275.
Corolla salver-shaped five-cleft (sometimes four or even
three) bearded at the throat; segments of the calyx
five, equal.
42. *Gentiana auriculata.*
Pallas fl. ross. 102. t. 92. f. 1.
Corollas four and five-cleft bell-shaped villose within,
the alternate segments cordate.
- *** Corollas not five-cleft.
43. *Gentiana campestris. Field Gentian.*
Lin. spec. 334. *Reich.* 644. *fl. lapp.* 94. *suec.*
n. 230. *Huds. angl.* 103. *With.* 262. *Lightf.*
152. *Engl. bot.* t. 237. *Hall. helv.* n. 650.
Scop. carn. n. 289. *Fl. dan.* t. 367. *Gunn.*
norv. n. 96. *Allion. pedem.* n. 354. *Krock.*
filef. n. 391. *Pallas ross.* 103. *Bocc. mus.* t. 101.
Villars dauph. 2. 530.
G. purpurea minima. Column. ecphr. 1. 223. t. 221.
Barrel. ic. t. 97. f. 2. *Mor. t.* 5. f. 9.
Gentianella alpina verna minor. Baub. pin. 188.
β. *Fl. dan.* t. 318.
G. tenella. Friis æt. haffn. x. 436. t. 2. f. 6.
Retz. obs. 1. n. 24. & 5. n. 41.
Corollas four-cleft bearded at the throat; calyx four-
leaved, the two outer segments very large.]
44. *Gentiana ciliata. Fringed-flowered Gentian.*
Lin. spec. 334. *syst.* 269. *Reich.* 645. *hort. cliff.*
81. *Hall. helv.* n. 653. *Scop. carn.* n. 287.
Pollich. pal. n. 260. *Jacqu. austr.* 2. t. 113.
Gunn. norv. n. 733. *Fl. dan.* t. 317. *Allion.*
pedem. n. 355. *Krock. filef.* n. 392. *Pallas*
ross. 101. t. 92. f. 2. *Gmel. sib.* 4. 105. n. 73.
Villars dauph. 2. 531.
G. angustifolia autumnalis minor, floribus ad latera
pilosis. Baub. pin. 188.
Gentianella cærulea oris pilosis. Baub. pin. 188.
Raii hist. 719. *Mor. t.* 5. f. 10.
G. autumnalis fimbriato flore. Park. theat. 406.
n. 2. 407. f. 2.
G. cær. fimb. angustif. autumn. *Column. ecphr.* 1.
222. t. 221. f. 1.
β. *G. detonsa. Friis æt. haffn.* 10. t. 1. f. 3. *Retz.*
obs. 1. n. 25.
Corollas four-cleft ciliate at the edge.
45. *Gentiana cruciata. Crosswort Gentian.*
Lin. spec. 334. *Reich.* 645. *mant.* 349. *hort.*
cliff. 81. *Hall. helv.* n. 643. *Scop. carn.* n. 288.
Pollich. pal. n. 261. *Leers herb. born.* n. 179.
Jacqu. austr. 4. t. 372. *Krock. filef.* n. 393.
Pallas ross. 108. *Villars dauph.* 2. 531.
G. cruciata. Baub. pin. 188. *Park. theat.* 402.
f. 2. *Raii hist.* 717. *Fuchs. hist.* 420. *Mor. t.* 5.
f. 16.
G. minor. Cam. epit. 417.—*cruciata. Ger.* 351.
f. 3. *emac.* 433. f. 4.—f. *vulgi Cruciata. Baub.*
hist. 3. 522.
Herba fullonum. Brunf. 2. 52.
Tretorrhiza. Renealm. spec. 74. t. 73.
Corollas four-cleft, beardless, flowers in whorls sessile.
- [46. *Gentiana fessilis.*
Lin. spec. 335. *Reich.* 646.
Gentianoides fl. luteo. Feuill. peruv. 3. 20. t. 14.
Corollas four-cleft, flowers stemless, leaves ovate.
47. *Gentiana filiformis. Least Gentian, or Marsh Cen-*
tory.
Lin. spec. 335. *Reich.* 646. *Huds. angl.* 103.
With. 263. *Fl. dan.* t. 324. *Willich illustr.* 45.
Exacum filiforme. Engl. bot. t. 235.
Centaureum pusillum luteum. Baub. pin. 278.
C. palustre lut. minimum. Raii hist. 1092. *syn.* 286.
Vaill. par. t. 6. f. 3. *Mart. Tourn. par.* 1. 163.
n. 4. *Mor. hist.* 2. 566. n. 4.
Corollas four-cleft beardless, stalk dichotomous filiform.
48. *Gentiana heteroclita.*
Lin. syst. 270. *Reich.* 646. *mant.* 560.
Flowers four-cleft irregular, stalk brachiate.

49. *Gentiana scandens.*
Lour. cochinch. 171.
Stem shrubby climbing, corollas bell-shaped five-cleft, in
elongated pendulous panicles.
50. *Gentiana fimbriata.*
Vahl symb. 3. 46.
Corollas bell-shaped ten-cleft, alternate segments fringed
and smaller, leaves lanceolate.
51. *Gentiana diffusa.*
Vahl symb. 3. 47.
Stem branched dichotomous divaricate, leaves ovate-
oblong, peduncles capillary one or two-flowered.
52. *Gentiana albens.*
Thunb. prodr. cap. 48.
Leaves ovate stem-clasping, calyxes ovate, stem tricho-
tomous.
53. *Gentiana dubia.*
Thunb. prodr. cap. 48.
Corollas four-cleft, calyx lanceolate, panicle terminating
trichotomous superdecompound.

DESCRIPTIONS, &c.

The numerous species of this genus have very few characters in common; some of them indeed differ so much from others, that they have been ranged under separate genera, and some are yet of opinion that the genus should be divided. They are all herbaceous plants; the Gentians properly so called are perennial, most of the Gentianellas and the Centorys are annual. The leaves are simple, ovate, lanceolate or linear, or between these figures, opposite on the stem, and entire; commonly marked with five or three strong nerves. Flowers either axillary or terminating, solitary or else in bunches or whorls. Anthers coalescing in several of the species; as in Syngenesia Monogamia. Few of the species are commonly known or cultivated. Many of the Gentianellas though small are eminently beautiful, and a great ornament to the alpine regions.

1. See *Exacum viscosum*.]

+ 2. Root thick, of a yellowish brown colour, and very bitter taste. Lower leaves petioled, oblong-ovate, a little pointed, stiff, yellowish green, having five large veins on the back, and plaited. Stem three or four feet high and more, with a pair of leaves at each joint, sessile or almost embracing, of the same form with the lower ones, but diminishing gradually to the top. Flowers in whorls at the upper joints.

[Peduncles upright, one-flowered. When the flower opens, the calyx bursts on the side. Segments of the corolla from five to eight, with frequent dots scattered over them, divided almost to the bottom. At the base of the germ as many green tubercles as there are segments in the corolla. Filaments reaching beyond the flower. Anthers very large. Fruit short, swelling in the middle. Seeds often barren^b.

Native of Lapland, Sweden, Germany, Switzerland, France, Italy, and North America.

Haller observes that it occupies large tracts of country, untouched by any cattle. I observed this very remarkably about Chaud de Fond, and in other parts of Switzerland. It flowers in June and July.

Our old authors call it Felwort and Bitterwort. Before Hops had established their reputation, this with many other bitter herbs was occasionally used in brewing. Mr. Houghton (at the end of the last century) affirms, that he has divers times fold it for that purpose^c.

The root of this species of Gentian, imported from Switzerland, Germany, &c. is the principal bitter now employed in medicine, though the roots of several other sorts are said to be equally efficacious, and are even preferred by some. As the intense bit-
ters are generally admitted to be not only tonic and stomachic, but also anthelmintic; antiseptic, emme-
nagogue, antiarthritic, and febrifuge, this root has

^b Haller.^c Collections, 2. 335.

a better claim to the possession of these powers than most of the kind.

Many dyspeptic complaints, though arising from the debility of the stomach, are more effectually relieved by these bitters than by Peruvian bark: and Gentian joined with equal parts of tormentil or galls, has constantly succeeded, as we are told by Dr. Cullen, in curing intermittents, if given in sufficient quantity.

As a simple bitter, Gentian is rendered more grateful to the stomach by the addition of an aromatic, and for this purpose orange-peel is commonly used^d.

Gerarde informs us, that "master Isaac de Laune, a learned physician, sent him plants of this for the encrease of his garden from Burgundie: and that it is named in English Felwoort Gentian, Bitterwoort, Baldmoyne, and Baldmoney."

3. Root even larger than in the foregoing sort; as thick as a man's arm and two feet long, white within and striated on the outside, extremely bitter, and used medicinally in some countries, instead of *G. lutea*, with equal success. Stem smaller, a foot or eighteen inches in height. Leaves somewhat broader. Calyx spathaceous, obtuse, by which it is distinguished from the sixth, in which the calyx is six-cleft. Corolla smaller, divided into five or six segments, sometimes seven, dusky or pale purple, with the dots running into lines^e. Haller is of opinion that it can scarcely be separated from the sixth species.

Native of Denmark, Switzerland, and Silesia.—Introduced in 1768, by Professor de Saussure^f.

4. Root creeping with a transverse stock, and abundance of whitish fibres. Root-leaves often a span in length, standing up above the stem, broad-lanceolate, five-nerved, sheathing at the base. Flowering-stem coming out on the side of these, procumbent at bottom but gradually rising, having only one or two pairs of leaves, besides the floral ones on the top. Flowers sessile in aggregate whorls at two separate pairs of leaves. Calyx small, membranaceous, unequally four-toothed. Corolla small, of a livid pale colour, the border pale blue, four or five-cleft, the segments very short and sharpish. In its habit this is between the *purpurea* and *cruciata*, as *decumbens* and *algida* are between this and *Pneumonanthe*. The herbaceous part is hardly bitter.

Native of all Siberia, especially the eastern part, where the *cruciata* is not found; flowering in July and August^g.

5. Root yellow on the outside, very bitter, fusiform, branched. Leaves and even bractes approaching in form to those of *G. pannonica* (n. 7.), soft, thickish, ovate-lanceolate, running into a longer point than in *G. punctata*; prominent nerves on the lower surface five or seven. Stem smooth and even, from dark blue becoming green, erect, two spans in height, round but alternately somewhat ancipital between the joints. Flowers almost sessile in two or three whorls, in each axil from one to three. Calyx in shape of a short bell or rather basin, seven-cornered, membranaceous, whitish, except at the corners, where it is sky-blue; border gaping, seven-cleft; toothlets short, broadish, blunt, entire, flat, green, leafy. Corolla large, sulphur-coloured, shining as if polished, streaked longitudinally, but not spotted, bell-shaped, bellying out and almost spheroidal at the base, and thence cylindric; border seven-cleft; clefts equal, erect, contiguous, obtusely triangular, quite entire.

Native of Carinthia, on mount Garten in Reichenau; flowering in July. Discovered originally by Burser^h.

6. This agrees in many respects with *G. pannonica*, but the leaves are more ovate, less elongated, and more strict; the calyxes shallower and more in form of a basin, the calycine teeth much narrower, sharper, and less leafy; the corolla of a papery substance, extremely thin, of a dull and very pale

greenish straw-colour, with very minute dots thickly and irregularly scattered over it. Segments of the border commonly seven; sometimes eight, but very seldom six, always shorter, narrower, contiguous, rounded, blunt, without any auricles at the base; and finally the bellying of the corolla is blunter and almost the same over the whole bellⁱ.

Native of Austria, Silesia, Italy, &c. Introduced in 1775, by Drs. Pitcairn and Fothergill^k.

7. Root yellowish on the outside, whitish within, intensely bitter. The whole plant is smooth and shining. Stem from half a foot to two feet in height, round or slightly angular, erect, a finger thick at the base, which is covered with sheathing scales, having a bifid or trifid mouth. Leaves opposite, broad ovate or lanceolate, acute, quite entire, bright green, somewhat plaited, having five prominent pale nerves on the back, attenuated into connate petioles; the upper ones more sessile. Flowers from the axils on very short peduncles, three, four, or five, seldom more on each side, forming whorls, supported by bractes resembling the leaves. There are commonly two or three whorls, with flowers much more numerous in the upper one; but in smaller plants there is only one. Calyx bell-shaped, loose, thin, obscurely six-cornered, divided to the middle into the same number of segments with the corolla, these are lanceolate, acute, spreading, and two of them opposite to each other larger and distant. Corolla large and elegant, divided into six or seven, roundish, very blunt, erect segments; the outside at the base and the whole inside of the tube are pale yellow, the rest is dark purple; the whole sprinkled with very dark purple dots^l.

Although this resemble *G. purpurea*, yet it has a much smaller flower, of a different colour from that; the stem-leaves also are ovate and sharpish, but never produced into a point^m.

Native of Switzerland, the Tyrol, Silesia, and the Carpathian mountains.

8. Stem a foot or eighteen inches in height, having the air of *G. asclepiadea*, round, smooth, quite simple. Leaves spreading, five-nerved. Flowers from the upper axils usually two together, and three at the top of the stalk, crowded together into a corymb, on short peduncles, the same size as in the next species, the upper one flowering first. Calyx small, angular, truncate, with linear segments from the angles. Corolla bellying, naked within, contracted in the tube, blue, the border divided into five, six, or seven reflex segments, dotted at the base, having upright straps cut into several capillary jags between each segment. The number of stamens corresponds with the number of segments in the corolla. The whole plant is smooth. Both root and herb are very bitter.

Native of the mountains of Persia near the Caspian sea, and of the Chersonesus Tauricaⁿ.]

9. Stem upright, near a foot high. Leaves smooth, about two inches long, and three quarters of an inch broad at the base, embracing there, and ending in an acute point; they are of a fine green, have five longitudinal veins, joining at both ends, but diverging in the middle, and diminish in size as they are nearer the top. Flowers in pairs opposite, on short peduncles; they are pretty large, bell-shaped, and of a fine blue colour.

[Leaves bluntly serrate, resembling those of *Asclepias*, whence it has the trivial name. Calyx obscurely pentangular, scarcely the third part of the length of the corolla. Stamens much shorter than the corolla, with long, yellow anthers. Like several other species, it varies with a white corolla^o.

It differs from the foregoing principally in size, in having flowers in the axils to the middle of the stalk, a simple corolla, thrice five-cleft not dotted. The lower leaves five-nerved, the upper three-nerved. Calyx somewhat spathaceous, putting out segments often as long as the corolla. This is the

^d Woodville.

^e Haller and Krockner.

^f Hort. kew.

^g Pallas.

^h Jacquin.

ⁱ Ibid.

^k Hort. kew.

^l Jacquin.

^m Linn. syst.

ⁿ Pallas.

^o Haller and Krockner.

most tasteless and least bitter of the genus^p.—Ray says that the root is very bitter. Haller affirms that the tube of the corolla is spotted, and that sometimes the segments are so. According to Linneus the calyx is as long as the corolla.

Native of Switzerland, Hungary, Stiria, Austria, Silesia, Piedmont, Barbary, mount Caucasus, &c. It flowers with us in July and August. Cultivated in 1629, as appears from Parkinson^q.

10. Root fibrous. Root-leaves none. Stem upright, very straight, a span high, round, furnished with very small leaves at bottom, becoming gradually longer higher up, decussately opposite; they are stiff and somewhat rigid, blunt at the end, and turned back at the edge; the largest are near three inches in length. Flowers at the end of the stalk in threes, and sometimes another pair of them from the next axil of the leaves. Calyx purplish, unequally five-cleft, subspathaceous, cut more deeply on one side, the segments linear and sharp, alternately larger and smaller. Tube of the corolla angular, whitish; the border dark blue, with subcordate blunt segments, distant at the base from each other with a right-lined interval. Filaments unequal; anthers upright. Germ fusiform, with a bifid stigma. It is really different from *G. Pneumonanthe*, with which it may easily be confounded, from having a flower of the same colour, by its being so stiffly upright and bitter. It flowers in July and August.

Native of Eastern Siberia^r.]

11. Stem upright, about a foot high. Leaves smooth, an inch and half long, and less than a quarter of an inch broad; they have no petioles. Flowers on the top of the stalk, three or four in number, on peduncles alternately above each other; they are large, and being of a deep blue colour, make a fine appearance.

[Stem seldom or ever branched, round or very obscurely angular, smooth as is the whole plant. Leaves vary from linear to almost spatulate^t.

Haller says that some are elliptic and obtuse, others linear and acute—Scopoli, that they are not truly linear but linear-lanceolate—Pollich, that they are linear and bluntish—Krocker, that they are either lanceolate-linear or completely linear. The flowers according to Haller are solitary and almost sessile in the axils or bosoms of the leaves. Pollich says, that one terminates the stem, and the rest are axillary, solitary and subsessile—Scopoli, that the lower corollas are peduncled and from the axils. Krocker describes them as terminating and axillary, peduncled, solitary or in pairs, six, eight, or ten in the whole, with two or four stipules under the peduncles. These variations occur in different soils and situations: with us certainly the plant seldom bears more than one or two flowers; but after a wet spring it is found much more luxuriant, bearing, five, six, or seven flowers^u.

Calyx cylindric, or very obscurely angular, with linear leaflets often reflex at top, scarcely a third of the length of the corolla: which is plaited in angles, of different shades of blue, the tube paler and dotted within. Anthers connected full as much as in *Lobelia*, and much more so than in *Viola*^x. Five glands at the base of the germ, as in *G. lutea*^y. Stigma revolute, remarkably long^z. It has the bitterness and qualities of several among its congeners^a.

Pallas distinguishes this from his *triflora*, by its having a more slender stalk, and leaves more lanceolate and acute. One flower at the end, the rest axillary, all peduncled, when there are several; for sometimes there is no more than one. Calyx deeply five-cleft, the segments linear, two alternate ones larger than the rest. Corolla larger, more dilated at the throat, plaited, the segments sharper and subferrate, with a tooth of the plait between each; the

structure of the flower therefore is very different from the foregoing.

Native of Sweden, Denmark, England, Switzerland, Carniola, the Palatinate, Silesia, Piedmont, in the temperate parts of Russia and all Siberia, in moist meadows and marshes: Ray found it near Lindau in Germany. It flowers in August and September; or, as Linneus observes, with the *Colchicum*. With us it is not very common in the south, but in the north much more so. In Lincolnshire and Yorkshire abundant, in the boggy parts of heaths, as in Tatterthall-park^b. Found by Mr. Newton between Clapham and Engleton. Near Doncaster by Mr. Tofield. Near Milthorp in Westmoreland, and in Lancashire common. Near Tunbridge in Kent, by Dr. Wilmer^c. On Longfield downs near Gravesend, near Greenhithe, Cobham, &c. in Kent, and near Bath, by Gerard^d. At Lellingstone, and near Dartford in Kent, and in the west country in divers places, by Parkinson. Johnson (Ger. emac.) is of opinion that Gerard did not know the plant, and says that he never found it but once, and that was on a wet moorish ground in Lincolnshire, called Netleton-moor, two or three miles on this side Caster. Johnson was so well acquainted with Kent, that he cannot well be mistaken. On Stratton Strawless heath near Norwich, by Stillingfleet.

12. This rises usually sixteen inches high, with upright straight stems, having long sharp-pointed opposite leaves, spreading horizontally. From the axils of these come out four or five blue flowers^e.

Native of North America. Introduced in 1776, by Mr. William Young. It flowers in August and September^f.

13. Leaves oblong, acuminate, slightly villose. Flowers bell-shaped, ventricose, erect, pale yellow or white on the outside^g, and variegated with lines on the inside.

Native of Virginia^h.

14. Root large, woody, branched. A set of ovate-lanceolate leaves spreads on the surface. Stem from one to three inches in height, with one or two pairs of leaves on it, and terminated by one very large, upright, handsome flower (in a garden, when the plants are strong, there are sometimes more). Calyx angular, cloven half way down; the segments lanceolate, acuminate, scarcely a third part of the length of the corolla; which is of a deep azure blue, dotted on the inside. Five melliferous tubercles at the base of the germ, as in *G. lutea*ⁱ.

This plant, in its natural alpine situation, has little or no stem, whence its trivial name; but it acquires one in a state of cultivation.

Native of Switzerland, Austria, Carniola, Silesia. Ray remarked it on the highest parts of mount Jura. It flowers in our gardens in April and May; and sometimes a second time in the autumn. In the alps the time of flowering is June, July, and August. It was cultivated in 1629, according to Parkinson. In 1636, it was to be found in most of our choice gardens, as with Mr. Parkinson, Mr. Tradescant, Mr. Tuggye, &c.^j

15. Root small, annual, very slender, bitterish. Stems in tufts, from an inch to a span in height, seldom branched, decumbent at bottom then upright, jointed, leafy, terminated by one flower. Root-leaves four, seldom more, spreading on the ground; both they and the stem-leaves smooth, quite entire, bright green, sessile, flat. Calyx cloven to the base, green, smooth, the segments equal, lanceolate. Corolla deep blue, at the base and throat whitish. It flowers at the end of August^k.

Native of Dauphiné, Savoy, Piedmont, Silesia. Distinguished from *G. nivalis*, to which it is very nearly allied, by its tender ovate leaves without veins, its slender stalks bearing usually one flower only, the segments of the flower nearly erect, and the calyx by no means long, and tubular^l.]

^p Pallas. ^q Hort. kew. ^r Pallas. ^t Engl. bot.
^u Sutton in Engl. bot. ^x Engl. bot. ^y Haller.
^z Krocker. ^a Haller.

^b Ray. ^c Hudson. ^d Catesby. ^e Hort. kew.
^f Gronovius. ^g Linn. ^h Haller and Krocker.
ⁱ Ger. emac. ^k Krocker. ^l Allioni.

16. This rises with an upright branching stalk, near two feet high. Leaves oblong, smooth, acute-pointed. The upper part of the stalk divides into several forks, between which are six or seven long naked peduncles, each sustaining one large blue flower.

Native of the West Indies, discovered by Plumier; and found afterwards by Houstoun plentifully at La Vera Cruz, in low moist places, where the water stagnates, remote from the coast. Cultivated by Mr. Miller before 1733.

[17. Root perennial. Root-leaves ten or more, in a bunch, linear-lanceolate, three-nerved. Stems one or two, coming out on the side of the bunch of leaves, decumbent at bottom then rising, a span or a foot in height, naked at bottom, a pair of leaves in the middle, bearing leaves and flowers at the end. Stem leaves linear. Flowers sessile, commonly three terminating among the top leaves, and two pairs opposite accompanied also with leaves; seldom in threes. Calyx angular, smaller than in *G. Pneumonanthe*, with the segments narrower, awl-shaped, but alternately larger, as in that. Colour, figure, and almost the size of the corolla, as in *G. Pneumonanthe*. Filaments only half the length of the corolla. Germ fusiform. Stigma sharp.—Sometimes the plant is larger, and then the root-leaves are near an inch in breadth, the flowers more in number; and sometimes there is a little axillary branch with one flower on it, at the lowest pair of sessile flowers.

In farther Sibiria; flowering from July till stopped by the frost. It is gently bitter and aromatic: hence it is used medicinally in Tibet.—It varies with a white and purplish white corolla^m.

18. Root perennial. Stem very straight, round, from a finger's length to a span in height, with two or three pairs of broad-lanceolate three-nerved leaves on it, slightly sheathing it at the base. Flowers three or four together sessile among the upper leaves, with sometimes an accessory one or two from the next axil. Calyx purplish, cylindric, cut on one side when the flower is in maturity, cloven half way down, the segments linear, two alternately larger than the rest. Corollas large, plaited, of a milky colour and diaphanous, with streaks in five rows converging by pairs like flames, dots in rows on the tube, and very small dots more frequent towards the border, of a livid blue colour, more or less deep: the segments of the border shallow, triangular and distant. Filaments thickest in the middle, blue: anthers upright, lemon-coloured. Germ fusiform, with a slightly bifid stigma. Capsule included in the withered corolla. Seeds gray, scariose and wrinkled. The leaves next the root are collected into a bunch; they are pale green, juicy, tender, and linear-lanceolate. The whole plant becomes pale in drying. It resembles the foregoing species, and is very nearly allied to it, but differs in some essential characters; Gmelin therefore makes it a variety of *G. Pneumonanthe*, and Linneus of *G. punctata*, without reason.

On the snowy alpine tops of eastern Siberia, and other parts of the Russian empire; flowering in August.—Intensely bitter, and proper to be used medicinallyⁿ.

19. Stem herbaceous, single, very seldom subdichotomous, slender, round, grooved, erect, smooth and even, a hand or a span in height. Leaves nerveless, somewhat fleshy, very smooth, quite entire, opposite, at the peduncles frequently in fours, spreading, yellowish green, two inches long: root-leaves approximating, on subimbricate channelled petioles. Peduncles two or three together, seldom four, from the top of the stem, one-flowered, angular, from upright spreading, two inches long. Flowers white, upright.

Native of New Zealand. Found in Dusky-bay, March 7th, 1773.

^m Pallas.

ⁿ Ibid.

20. Native of New Zealand^o. Found also in Dusky-bay.

21. Root filiform, slender, woody. Root-leaves in a ring, thickish, with nerves scarcely visible. Stem simple, round, upright, from two to four inches in height, having three or four pairs of sessile leaves on it, which are somewhat fleshy, and smaller than the root-leaves. Flowers usually three, seldom one only at the end, together with an accessory pair from the uppermost axils. Calyx blueish, small, bell-shaped, the segments awl-shaped, and equal. Corolla three times as long as the calyx, somewhat bellying, pale blue with the tube whitish; the segments of the border blunt. Anthers white. Capsule fusiform, wrapped in the corolla.

There is a variety of this, in high, exposed, rocky situations, with two or three flowers sitting close to the root-leaves, without any stalk.

The former is native of the highest mountains of Kamtschatka; flowering from June to August, and ripening its seeds in September^p.

22. This is a little plant hardly two inches high. A perennial yellow branched root puts up several simple stalks, each supporting one flower. Root-leaves spread in a ring, smooth, ovate-lanceolate; on the stalk two or three pairs. Calyx five-cornered, half the length of the corolla. Segments of the corolla slightly ferrate, either blue or beautiful deep azure, and between each a small horned whitish blue process. Capsule fusiform, long, bursting when touched^q.

It differs from *G. pumila* in the leaves being channelled, more rigid, and half-stem-clasping; the plaits of the calyx, terminating it in so many teeth, elevated; the little ears or processes emarginate; the stigmas finely ferrate and resembling a little drinking glass^r.

In Linn. syst. it is observed that it is nearer to *Primula*, and scarcely bitter.

Native of Switzerland, Savoy, Piedmont, Austria, Carniola, Silesia: flowering early in the spring; both in moist meadows and in alpine situations. Ray found it abundantly on the mountains near Geneva: and I gathered it in flower on Mont Saleve the 13th of April, 1779. On the high Alps it flowers later.

It varies with a white flower.—A beautiful blue colour may be extracted from the flowers as they are more commonly found^s.

23. Perennial. This is very like the foregoing, but the corolla is regularly ten-cleft; the segments blunt, the alternate or outer ones green on the outside, within all are blue. Leaves linear or linear-lanceolate. Stalk perennial, procumbent, with upright branches, bearing one flower the length of the branch.—Native of the Pyrenees^t.

24. Root slender, two or three inches long. Both root-leaves and stem-leaves closely imbricate, subulate-linear, sharp. Stem usually single, but sometimes two or three, about an inch in length, somewhat naked under the flower, with one pair of leaves near it. Calyx angular, the segments equal, sharp, and distant at the base. Corolla three times longer than the calyx, above two inches in length, of a very deep blue colour, with pale flame-like streaks rising from the tube. Anthers upright, sagittate, yellow. Germ fusiform-club-shaped, with the style produced, and a fungous simple stigma. Capsule lanceolate, wrapped in the decayed flower. Seeds grayish-brown. It varies sometimes with a four-cleft or six-cleft corolla.

It is very nearly allied to *G. pyrenaica*, and like that is almost void of bitterness: it may therefore only be a variety arising from situation. The principal difference consists in the superior size of the flower, the strength of the whole plant, and the shortness of the stalk.—*G. pumila* of Linneus and Jacquin, seems to be the same plant with the *pyrenaica*.

^o Forster.

^p Pallas.

^q Haller.

^r Haller, Krockér.

^s Linn. mant.

^t Scopoli.

Native of the snowy cliffs of the Altaic alps^a.

25. Stems one-flowered. Corolla scarcely ferrate^z. Leaves sharp, scarcely four lines long, and one broad. Stem about an inch in height, with two pairs of leaves, one near the calyx, which is cloven half way down, and is angular with five raised lines. Tube of the corolla yellowish, not plaited; segments quite entire, with horned processes^y.

Haller is of opinion that this does not differ from *G. verna*: and Pallas cannot see any difference between the specimens which he received of this from Jacquin, and the *pyrenaica*.

According to Villars, it differs little from *verna*, but it is smaller and has linear leaves; the stems have more leaves on them, namely three or four pairs, and are creeping, the divisions of the corolla are obtuse and are very finely toothed.

Native of the mountains of Dauphiné, Austria, and Carniola.

26. Leaves blunt, not sharp, as in *G. verna*^z. Root-leaves spreading in a ring, perfectly round. Stem often prostrate, three inches or more in height, with eight or ten pairs of ovate leaves on many. Flower solitary, large: calyx half the length of the tube of the corolla, divided not more than a third of the way down into five sharp segments, frequently violet-coloured. Tube of the corolla long: segments ovate, moderately acuminate, a little ferrate, of the finest sky blue: processes shortly horned arise from a white line of the tube. It varies with a white flower, like most of the others^a.

The Siberian plant is taller, and larger in all the parts than the German. Root filiform, simple, or branching only into fibres. Root-leaves sessile, ovate and sharp. Stem naked, a finger's length, sometimes a long span high, with one pair of leaves only towards the flower, and two floral leaves. Calyx divided into five equal, sharp segments. Border of the corolla spreading, equally five-cleft; segments ovate-oblong, deep blue, very finely ferrate. Hence *G. verna*, from Switzerland, with both bluntish and sharp leaves, does not differ from *G. bavarica*. These therefore make one species: as *G. pumila*, *pyrenaica*, and perhaps *altaica* do another. But *G. islandica* of *Flor. dan. t. 317.* differs widely from *G. bavarica*^b.

Native of Switzerland and Germany. About the lake Baikal, and on the Carpathian mountains in the Russian empire: flowering early in the spring.

It was introduced in 1775, by the doctors Pitcairn and Fothergill^c.

27. Root annual. Stem erect, a span high. Branches at the root several, small, very upright. Root-leaves ovate, smooth, small; stem-leaves similar, larger, sessile, bluntish. Flowers terminating, few, in a head. Calyxes narrow, subpeduncled, divided into five awl-shaped segments. Tube of the corolla the length of the calyx; border yellow, the segments quite entire, without any teeth interposed^d.

Retzius thinks that *G. involucrata* of Friis (act. Haffn. x. t. 1. f. 2.) and the Flora Danica (t. 344.) may be referred to this species. It is entirely different from *G. quinqueflora*, n. 38.

Native of the mountains about Bourdeaux, and of Norwegian Lapland.

28. Root annual, small. Stem sometimes one-flowered, but frequently branched, having one flower coming out from each axil regularly one above another, often alternately, but sometimes in pairs. Root-leaves ovate, bluntly lanceolate, few: stem-leaves a little longer, ovate, acuminate, as far as eight pairs. Calyx five-cornered, half the length of the corolla, cut one-third of the way; segments ending in a long and very sharp point. Corolla somewhat stiffer than the other Gentianellas. Segments lanceolate, greenish on the outside, deep blue within, having a tinge of green. Processes between the segments arising from the white lines of the tube.

In the mountains of Lapland; in the Alps of Switzerland, where as Haller observes it is a genuine alpine plant; and between Savoy and Piedmont, as Mont Cenis, &c. and on the Pyrenees, adorning them, as Linneus speaks, with the splendour of its deep vivid blue flowers. It has also been found by Mr. Dickson on Ben Lawers in Scotland.

It varies like most of the others with a white corolla. The fading from blue to white is indeed very common in flowers.

29. Root annual, filiform, somewhat branched, white. Root-leaves spreading in a ring, very much crowded together, ovate-rounded. Stem-leaves imbricate, ovate-sharpish, decussated. Stems from two to twenty, usually simple, but sometimes branched dichotomously, in the flowering plant very short, but in the fruiting plant lengthened out, the leaves becoming more remote and produced into an oblong form. Flowers small. Calyx largish, five-cornered; the segments awl-shaped, sharp, equal. Corolla angular and plaited, pale azure on the outside with green ribs, the segments acuminate with smaller teeth interposed. Capsule involved in the flower, the corolla becoming green; it is shaped like a long club, and compressed: when ripe, the valves are turned back a little, and the minute, yellowish seeds are thrown out. It varies with a white corolla.—It approaches very near to *G. nivalis*; and is larger in cold situations, than in more southern ones. Being very bitter, it is used medicinally in Dauria. It flowers in the middle of May: and is found from the river Jenisea to the eastern ocean in sandy wet meadows, and especially by lakes and rivers^e. It is found also in China and Japan.

30. Root slender, fusiform, fibrous, yellow, annual (perennial, *Allioni*). Root-leaves spreading on the ground in a four-cornered tuft, but soon decaying. Stem upright, a finger's length or a hand in height, sometimes higher, slightly angular, smooth; branches opposite, each with the stem terminated by one flower. Leaves seven pairs or more, ovate, blunt, quite entire, connate-sessile, upright, bright green, smooth. Calyx five-cornered. Corolla eight lines in diameter, greenish on the outside, fine sky-blue or azure within; segments lanceolate, spreading, with horned, smaller whitish segments interposed. The corolla is sometimes six-cleft^f.

Ray remarks, that this species differs from all the Gentianellas which he has observed, in having the tube of the corolla no longer than the calyx, but the segments of the former spreading immediately over the top of the latter, as in the Pink.

Stigmas whitish, forming a cap flattened at top, with glands all round^g. Capsule almost cylindric, long; filled with abundance of ovate, acuminate, wrinkled seeds^h.]

Mr. Miller observes, that after the top flower decays, there are frequently two smaller flowers come out from the side of the stalk, at the two upper joints; these flowering after each other, there is a succession of flowers till autumn.

[Native of the mountains of Switzerland, Germany, Austria, Idria, and Italy; flowering in June. Ray relates that he found it abundantly in going from Munich to Augsburg.

This also varies with a white flower.

31. The whole plant is only about a finger's length. Stem simple, slender, upright, angular. Leaves small, roundish, broad, veined, connate, two or three pairs. Flowers terminating, in a loose, broad, ventricose, membranaceous, striated calyx; segments of the corolla oblong, narrow, equal, yellow.—Native of the Cape of Good Hopeⁱ.

It seems to belong to a different genus.

32. The whole plant smooth and glaucous. Root fibrous^k, annual, woody, yellowish. Stalk from four inches to a foot in height^l, upright, hexangular^m,

^a Pallas.
^b Haller.

^x Linn. syst.

^y Scopoli.

^z Linn.

^c Hort. kew.

^d Linn. spec.

^e Pallas.
^f Haller.

^g Pollich, Haller.

^h Burman.

ⁱ Scopoli.

^k Lyons Mss.

^l Stokes in With.

^m Lyons Mss.

or quadrangular, generally simple, but frequently putting out upright simple branches some way above the root, and sometimes branching all the way to the top. *Leaves* next the root oblong, or wedge-shaped, narrowed at the base, blunt at the end—stem-leaves lanceolate, pointed, upright, the uppermost often bent inward: floral leaves linear:—all sessile, three-nerved, quite entire. *Flowers* in a corymb, upright, and subsessile: *calyx* upright, slightly adhering to the tube of the corolla, permanent; segments awl-shaped, connected by a membrane; at the base, two very short awl-shaped bractes^a: *corolla*, tube one-third longer than the calyx, slightly coloured, streaked; border generally rose-coloured or pink, plaited at the base, the fissures keeled on the outside, and the segments on the inside^o; there are no ears or processes between the segments^p. *Filaments* from the top of the tube, shorter than the corolla: *anthers* oblong, upright, after they have shed their dust twisted spirally from right to left; which circumstance has induced some botanists to remove this plant into the genus *Chironia*. *Germ* oblong, filling the tube of the corolla, having a longitudinal furrow on each side: *style* one, half the length of the germ, inclining to one side, cloven half way down, and divisible without much force all the way: *stigmas* two, on short pedicels, nearly orbicular, greenish-yellow. *Capful* one-celled, the edges of the valves being turned inwards, but not so far as to meet. *Seeds* roundish yellow^q.

Our Gerarde, remarked (1597) that, “the flowers, (which he describes as growing at the top of the stalk in a spokie bush or rundell, of a red colour tending to purple), in the day time, and after the sun is up do open themselves, and towards evening do shut up again.”

Native of most parts of Europe from Sweden and Denmark southwards to Italy; and in all the temperate parts of Russia, in dry pastures: flowering from June to August.

It is extremely bitter, with a disagreeable flavour, whence Haller observes that it was called *fel terra*, or gall of the earth, by the ancients. He also determines it to be the *graveolentia Centaurea* of Virgil, to which Lucretius gives a more significant epithet of *tristia*, expressive of its extreme bitterness.

It is the basis of the famous Portland powder, which prevents fits of the gout, when taken in a large quantity, and a long time together; but brings on hardness of the liver, palsy, and apoplexy. A tincture of the leaves, and the upper part of the root, is a good medicine to weak stomachs and cachectic habits. A decoction of the whole plant destroys lice, and cures the itch^r.

It is not uncommon with a white corolla: this also is sometimes only four-cleft^s. In boggy places it is found with a very short stem, remarkably branched^t.

Although good reasons be given by Mr. Curtis and Dr. Stokes, why this species should be removed into the genus *Chironia*, yet averse from change I have left it where Linneus placed it, and other botanists still continue it.

33. Stem scarcely an inch high. Root-leaves commonly in fours, ovate; stem-leaves opposite, obovate; all naked, quite entire. Flower terminating, solitary. Calyx five-cornered; segments acute, membranaceous. Corolla scarlet, with the segments very acuminate.

Native of Sweden^u.

34. Stem scarcely a hand high, round, and somewhat woody. Branches opposite, extremely simple, four-cornered, compressed, smooth and even. Leaves subsessile, lanceolate, smooth and even, longer than the internodes of the branches. Flowers sessile. Calyx short; segments acuminate, keeled, scariose at the edge. Corolla resembling that of *G. Centaurium*, but fulvous, with sharp segments. Stamens

in the throat. Style simple, filiform, shorter than the tube of the corolla. Capsule subglobular.

Native of the East Indies^x.

Linneus supposes the South American plant to be the same with this: it has however a more tender branched stalk than the American; the leaves are shorter and narrower; the corollas narrower, with a longer tube, and sharp but not mucronate segments; the calyxes ovate-acute, with segments shorter than the capsule. In the American plant the stem is more stiff and robust, with the angles somewhat rugged not smooth and even; the segments of the calyx narrower and reflex^y. See n. 37.

35. This resembles *G. Centaurium*, but the flowers are peduncled and yellow; the leaves have not three nerves but one only^z.

Gerard adds, that the tube of the corolla is longer, the flowers fewer in number, and the style double.—And Pallas, that the segments of the calyx are almost capillary; the tube of the corolla very narrow, dilated at the throat, the segments of the border nearly linear. Stem seldom more than a hand high, sharply four-cornered, dichotomous at top. Leaves usually oval, not ovate-lanceolate as in *G. Centaurium*. Peduncles thick, round, half an inch in length. Calyxes sharply five-cornered, the segments subulate, as long as the tube of the corolla, the whole of which is an inch in length. Capsule cylindric, a little longer. The calyx is permanent, and separable not without difficulty from the corolla.—There is a variety with two flowers at top, one terminating, the other lateral; sometimes bifid, or three-flowered, the lateral flowers equally peduncled, the middle one sessile^a.

Native of the sea coasts in the South of France, and Italy: about Naples, &c. also about Tiflis, and every where on the shore of the Euxine, where it has usually white corollas^b. In the Azores. Introduced in 1777, by Masson^c. It is annual, and flowers in May. With us in July and August.]

36. This is an annual plant, with an upright stalk, about a foot high, sending out several branches towards the top. The flowers are produced from the side and at the top of the stalk in loose irregular umbels; they are white, and about the size of those of Common Centaury.—Native of the South of France and Italy.

[This has frequently purple corollas.]

37. Native of America.—The East-Indian plant (n. 34.) is scarcely different. Root perennial. Stems several, a hand high, jointed. Leaves lanceolate. Flowers sessile. Corollas yellow; the segments five and sharp. Nectary a roundish scale annexed to the base of each filament, within the tube of the corolla. Stigma capitate. Capsule half-two-celled^d.

Koenig sent two plants from the East Indies, both agreeing with the Linnean character, but very distinct from each other. α . With the stalk angular at the base, but the upper part round; branched and streaked: the leaves lanceolate and three-nerved: the flowers in whorls from the upper axils. This is the same with that which is described above.

β . With the stalk regularly four-cornered, and perfectly simple. The leaves linear-lanceolate, fleshy and nerveless. Flowers from every axil, of the same form and size as the others. This is the plant which is figured by Burman^e.

38. Size and stature of *G. Amarella*. Stem undivided, four-cornered with the corners membranaceous. Leaves three-nerved, sharp. Peduncles opposite, bearing at the end five flowers on very short pedicels. Calyxes very short, narrow. Corollas blueish, with a small border, pervious at the throat^f.

According to Retzius, the *G. involucrata* of Friis, figured also in fl. dan. t. 344. is entirely distinct from this; not having five flowers on a peduncle, but from one or two to ten; the leaves blunt, and the calyxes by no means very short. He refers it rather to *aurca*, n. 27.—Found in Pennsylvania by Kalm.

^a Lyons Mss.

^o Stokes in With.

^p Scopoli.

^q Curtis and Stokes in With.

^r Withering.

^s Hudson.

^t Ger. prov. Vaillant, Haller.

^u Swartz in act. holm.

^x Linn. suppl.

^y Vahl.

^z Linn. mant.

^a Gouan.

^b Pallas.

^c Hort. kew.

^d Linn. syst.

^e Retzius.

^f Linn. spec.

39. A foot in height, tender and very smooth, with but few branches. Leaves subpetioled, small: the upper ones more remote. Peduncle long, naked, terminating, one-flowered. Bractes two, below the flower, opposite, awl-shaped, upright. Calyx linear. Tube of the corolla funnel-form, longer than the calyx: border flat, beardless, yellow.

Found in the Azores by Masson^g. See n. 35.

40. A very small, filiform annual plant, scarcely branched, native of the mountainous woods of Martinico^h: in the hollows of trees, scarcely pervious to the light. Stem upright, simple, four inches high, tender, shining, straw-coloured, with opposite, very short, remote stipules, at the joints. Flower terminating, solitary, erect, yellowish, inodorousⁱ.

41. So nearly allied, says Linneus, to *campestris* (n. 43.) as to be scarcely distinguishable, except by the calyx. Stem somewhat angular, branched; branches not longer than the leaves, (which are lanceolate) terminated by bunches of flowers. When this has a quadrifid calyx, it is in plants that are bitten down, and the divisions are constantly equal: besides the calyx of *campestris* is really four-leaved^k.

Root annual, twisted, yellowish. Stem square, erect, bearing several pairs of sessile, ovate, three-nerved, dark-green leaves, and clothed from top to bottom with flowers, on short, axillary, forked side branches, one being terminal. Calyx pale, with green ribs, and divided half way down into five lanceolate, nearly equal segments. Tube of the corolla twice as long as the calyx; segments of the border five, rarely three or four, horizontal when the sun shines, the orifice crowned with a purple upright fringe, which conceals the stamens. Germ oblong: styles very short: stigmas divaricated^l.

From the variation of the number of parts in the corolla, which I had observed to be frequently four and five on the same plant, I was formerly led to a false conclusion, that this and the *campestris* are not specifically different, but of this I now agree with Mr. Woodward that there is little doubt, the corolla varying so much as to number in this genus, as not to be depended upon for specific distinctions.

In dry pastures, through most parts of Europe, with us not uncommon, especially in calcareous soils: flowering from July to September. Linneus says, in the autumn, with Colchicum or Meadow Saffron, later than *campestris*^m. According to Ray, at the end of August, or somewhat earlier.

A variety under the name of the taller autumnal *Gentian*, with *Centauri-like leaves*, is said, in Ray's synopsis, to have been found near Welwyn in Hertfordshire, and Belchamp St. Paul in Essex: but it does not differ in any thing essential from the other.

Another variety is mentioned by Ray under the name of *G. fugax verna* f. *præcox*, differing in no respect from *Amarella* except in the time of flowering. This earliness may perhaps be owing to the plants having sprung up in autumn, and stood the winterⁿ.

42. Upright, almost simple, a foot or less in height. Root slender somewhat woody. Stalk subquadrangular, a little contracted. Root-leaves smaller than the others, ovate, attenuated towards the base; the lower stem-leaves resembling these; the rest very remote from each other, oblong, five-nerved, sessile; the uppermost somewhat clasping, and more lanceolate: they are all paler underneath, and sometimes purplish. Flowers five on the top of the stalk between two pairs of leaves, on very long peduncles, and sometimes from the next axils accessory little branches having one, two, or three flowers and one pair of leaves. Peduncles subquadrangular. Calyx angular, funnel-shaped, with two of the segments alternately broader, cordate-rounded, rolled back a little, and as it were eared. When the flower is five-cleft, three of the segments are ovate and smaller, the two others wider. Corolla usually four-cleft, the tube whitish, the segments rounded,

pale blue, extremely villose, at the base within, in-
somuch that the tube is entirely closed with the long hairs. Anthers small, brown, incumbent, not upright as in most of the species. Germ fusiform, with a twin stigma. Near the sea, it branches very much, and grows large; the farther it recedes from the sea, the smaller it becomes; in-
somuch that in mossy wet situations inland, it is hardly an inch high, slender, and one-flowered. The maritime plants have generally the corolla violet or reddish, on open heaths at a distance from the sea, it is pale blue or white, in marshes commonly blue.—Certainly distinct from *G. campestris*.—Found throughout all Kamtschatka, the islands towards Japan and America, and on the shore of America itself. The herb, both fresh and dry, is used by the natives as a stomachic and antiscorbutic, and against vernal diarrhoeas caused by feeding on fish; it is not however so bitter as some of the other species. It flowers the beginning of August, and perfects its seeds in September^o.

43. Linneus can hardly be persuaded that this is distinct from *Amarella* (n. 41.). He thinks it may be a variety, or perhaps a hybridous or mule plant. Scopoli boldly makes them one, because the flowers close at the approach of wet, in both; the ears of the corolla are finely jagged and upright; the edges of the calycine teeth are reflex; the base of the corolla adheres so close to the calyx, that when torn away it carries off the inner skin along with it; and the stigmas are alike in form and position.

Others have no doubt of their being perfectly distinct. The calyx in this consists of four separate leaflets; the two outer oval-lanceolate, very large, the inner lanceolate, something membranaceous, but one-fourth the breadth of the outer. Stem more angular, approaching to square, and branched; the branches longer than the leaves, with the flowers more scattered; leaves shorter, and not so sharply pointed. The flowers also are larger than those of *Amarella*, though the plant is usually smaller. Haller describes it as extremely branched, and there are specimens in England branched from the root to near the top; the branches long, with leaves and flowers scattered the whole length: but *Amarella* has the branches short, even the lower ones not exceeding the length of the leaves from which they sprang; the upper ones in general much shorter^p.

It is rather paler in colour, and never so tall as *Amarella*; the stem being less drawn up, the flowers fewer, and on longer flower-stalks, they appear more corymbose; but the essential mark of distinction is in the calyx being deeply divided into four unequal segments, two external, opposite, oval, very large, completely enfolding and concealing the two others, which are lanceolate and not a fifth part of their breadth^q.

According to Pallas, it differs from *Amarella* in being taller and more branched, the leaves narrower, two segments of the calyx much larger than the others, the corolla smaller by half, paler, more frequently four-cleft, &c. It differs from the foregoing species, in the stem putting out flowering branches almost from the root, branches frequent, and leaves more lanceolate, the herb of a darker green and frequently purplish, the flowers smaller and subsessile, all the leaves of the calyx sharp not alternately wide and heart-shaped, the segments also of the corolla sharp. He adds—1. that it varies in size from a foot and half or a span to three inches, and from a very branching state to perfect simplicity.—2. in the size and colour of the corolla.—3. in the division of the corolla into four or five segments; which is the case sometimes even on the same plant.

Native of most part of Europe from Lapland to Italy. Frequent in Russia and Siberia to the lake Baikal: whereas Pallas has not observed *Amarella* in Siberia, nor in Russia, except on mount Caucasus. With us it is not so common as *Amarella*: but it

^g Linn. suppl.

^k Woodw. Mss.

^h Linn. spec.

ⁱ Engl. bot.

^l Engl. bot.

^j Jacquin.

^m Fl. suec.

^o Pallas.

^p Woodw. Mss.

^q Engl. bot.

has been observed about Kendal and other places in the north, in Wales, Cheshire, Cornwall, Stratton-heath in Norfolk, Bury in Suffolk, &c.

In English Botany it is observed, that it grows in pastures, more particularly towards the sea; and that it is not so much confined to a calcareous soil as the *Amarella*. Linneus says that it flowers in summer, after the solstice. With us in september and october. Various months are set down by others, as april to june, and august. Dr. Withering says that he has seen it flowering in a garden in october. This, as well as the two former, is annual.

According to Linneus, poor people use it instead of hops in beer: and according to Pallas, as a medicine, in common with many other species.

44. Root small, round, straight, not annual, (biennial *Pallas*.) Stalk from two to eight inches long (a foot *Haller*,) reddish, angular, smooth, leafy; sometimes simple and one flowered, sometimes with opposite branches, terminated by upright, sessile, solitary flowers. Leaves sessile, the lower ones shorter, obovate or spatulate; the rest linear-lanceolate, acuminate, longer, quite entire, upright, smooth, not veined. Calyx quadrangular, lax, cleft into four parts down to the middle, green with a shade of dusky purple; the segments upright, lanceolate, acuminate. Corolla large, deeper or paler blue; the tube greenish, and obscurely quadrangular, the segments oblong-obovate, blunt. Filaments pale, flat, ciliate at bottom: anthers oblong, twin, bay-coloured with a yellow pollen. Germ lanceolate, four-cornered but flattened, on a long pedicel. Capsule fusiform, much flattened. Stigmas at first orbiculate, afterwards bifid and revolute^r. According to Pollich there are only four stamens. Scopoli observes four nectareous glands at the base of the pedicel on which the germ stands.

The corolla varies in different countries: in America it is much ciliated: in Italy but little; in Iceland and Norway it is only serrate^s.

Pallas remarks, that this species is the connecting link between this genus and the *Swertias*; that it is very upright, with stiff branches, sometimes exceedingly branched, much higher in Siberia and mount Caucasus than the European plant, but with smaller flowers. Pallas has figured them both.

Native of Switzerland, Norway, Denmark, Germany, Austria, Carniola, Italy, Siberia, Caucasus, Canada: flowering in august and september: in Italy in october, and even till winter.—It is used officinally, by the natives; and deserves a place in gardens from the beauty of the flowers^r.

45. Leaves lanceolate, three-nerved, connate. Flowers fewer from the lower axils, but more crowded from the top of the stalk. At each bunch of flowers there are two small leaves. Calyx short, truncate, with the teeth remote and short^u. It is divided into the same number of segments with the corolla: that is, most frequently four, but sometimes five. Corolla of a fine blue colour; between the segments are toothlets interposed, usually bifid, but sometimes simple, or trifid^z.

Pollich says that there are only four stamens. Both he and Leers remark, that the stigmas are rolled back in a spiral. The root is perennial; and it puts up several stalks, from a span to a foot high and more.

The leaves being in pairs, and each pair crossing the next at right angles, has given occasion to the trivial name *Cruciata*, and the English name *Crosswort Gentian*.

Native of Switzerland, Germany, Austria, Carniola, Hungary, the Apennines, Russia, and Siberia: flowering in july and august. In our gardens it flowers in june, and sometimes in may. Cultivated in 1596, by Gerarde^y.

46. Native of Chili.

47. Root white, woody, simple or with large fibres.

Root-leaves small, narrow, oblong. Stalk about three inches high, simple or branched, at each joint a pair of small, narrow, sharp leaves. Flowers at the ends of the branches on long pedicels, yellow, small, almost always closed, seeming, as far as could be discerned, to have five petals. Capsule elliptical^z. The division of the corolla is probably a mistake; though perhaps it may be sometimes five-cleft.

Every part of the herb is smooth. Flowers expanding only in bright sunshine^a.

Usually branched, though sometimes the stalk is simple. Corolla pale yellow, cut into four equal segments. Stamens four. Calyx cut almost to the base into four segments, rounded at the back^b.

It is a small annual plant, growing in bogs, in Denmark, France, and England. Mr. Ray first remarked it towards the end of Cornwall (near St. Ives) in rotten marshy ground. Dr. Pulteney sent it out of Dorsetshire. It is also found in Hampshire and Devonshire^c. The time of flowering is July.

48. Root annual, fibrous. The plant has the appearance of *G. Centaurium*. Stalk erect, a span high, dichotomous, quadrangular. Leaves sessile, ovate, quite entire, smooth, somewhat fleshy; the lower ones roundish; under the upper ramifications awl-shaped, very short. Flowers sessile, solitary in the divisions of the stem, of a purple colour. Calyx bent in a little, streaked, with four awl-shaped teeth. Tube of the corolla the same length with the calyx; border in two parts, each part divided in two; the two upper ones erect, the other two bent down inclosing a larger anther below, on the outside spreading. Stamens four unequal, three within the tube, the fourth inserted into the throat of the corolla, with a larger anther than the others. Germ oblong; style flexuose, longer than the stamens; stigma two-lipped, villose on the inside, with the lips reflex. Capsule shorter than the calyx opening with a spring.

Native of Malabar, in cultivated fields. Discovered by Koenig^d.

49. Stem large, woody, round, with many, very long, climbing branches, without spines or tendrils. Leaves ovate-lanceolate, quite entire, smooth, ash-coloured, opposite. Flowers lateral, with a small, five-toothed calyx, and a bell-shaped corolla, with a wide tube, on the outside ash-coloured dotted with white, within filled up with dense purple hairs; border spreading, white, bluntly five-cleft, short, the segments usually laciniate-plaited. Capsule roundish.

Native both of China and Cochinchina, climbing trees and hedges. It has an unpleasant fetid smell, which is lost in drying; and a very bitter flavour. In the Chinese plant the leaves are often cordate, slightly emarginate at the base. It is tonic and stomachic^e.

50. Stem round, erect, simple. Leaves connate at the base, two inches long, very smooth, three-nerved. Flowers from the upper axils and at the end of the stalk; the lower ones solitary on each side, sometimes only in one axil; terminating ones four, sessile. At the base of each calyx two linear leaves, narrowed towards the base, shorter than the calyx; which is tubular, widening gradually upwards, with five teeth the length of the calyx itself, leafy, linear-lanceolate, blunt, attenuated below. Corolla large, an inch and half wide, almost like that of *G. saponaria*.—Native of Virginia.

51. Stem herbaceous, four-cornered with decurrent lines, smooth. Leaves sessile, opposite, an inch long; the upper ones subcordate, all very smooth, ending in a short dagger-point, and three-nerved. Peduncles at the ends of the branchlets, commonly in pairs, one longer, two-flowered, the other shorter, one-flowered; at the base on each side is a bristle-shaped leaf. Calyx tubular, smooth. Corolla almost like that of *G. Centaurium*.—Native of the East-Indies^f.

^r Krocke.

^s Linn.

^t Pallas.

^u Linn. mant.

^y Haller.

^v Hort. kew.

^z Ray hist.

^a Engl. bot.

^b Vaillant.

^c Hudson.

^d Linn. mant.

^e Loureiro.

^f Vahl.

52, 53. Natives of the Cape of Good Hope; observed by Thunberg.

PROPAGATION AND CULTURE.

Of this numerous genus not above sixteen are cultivated in our gardens; and five only are wild in this country. The greater part are natives of the European Alps. Several of these have been lately introduced from thence by Doctors Pitcairn and Fothergill, but it is difficult to preserve some of them long in a situation so different from their proper one. Clusius affirms, that he could not by any art make the second or third species continue, or bear flowers in a garden.] The perennial sorts in general may be propagated both from seed, and by offsets, taken off in autumn, which is the best season for removing all these plants; but they should not be removed or parted oftener than every third year, if they are expected to produce strong flowers.

[The 1st, 34th and 35th with a few others not in cultivation at present require the protection of the green-house: the 16th and two or three others, little known, must be raised in a hot-bed, and kept in a stove; the rest are hardy, and were they not difficult to preserve, many of them would be very acceptable in borders of flowers.]

2. This plant delights in a light loamy soil and a shady situation, where it will thrive much better than in a light dry soil, or an open exposure. It is propagated by seed, which should be sown in pots soon after it is ripe, for if it is kept till the spring, it will not succeed; these pots should be placed in a shady situation, and kept clean from weeds. In the spring the plants will appear, when they must be duly watered in dry weather, and kept clean from weeds till the following autumn; then they should be carefully shaken out of the pots, so as not to break or injure their roots; and a shady border of loamy earth should be well dug and prepared to receive them, into which the plants should be put at about six inches distance each way, observing to let the top of the roots be a little below the surface of the ground, then press the earth close to the roots; after this they will require no farther care, but to keep them constantly clean from weeds; and if the following spring should prove dry, they should be duly watered, which will greatly forward their growth. In this border the plants may stand two years, by which time they will be fit to transplant where they are designed to remain; therefore in autumn, so soon as their leaves decay, they may be removed; but as the roots of these plants run deep into the ground, like Carrots, there must be great care taken in digging them up, not to cut or break their roots, for that will greatly weaken, if it does not kill them. After the plants are well fixed in their places, they require no other culture, but to dig the ground about them early in the spring before they begin to shoot, and in the summer to keep them clean from weeds. The roots of these plants will continue many years, but the stalks decay every autumn; the same roots do not flower two years together, nor seldom oftener than every third year; but when they flower strong, they make a fine appearance; and as these delight in shady moist ground, where but few ornamental plants will thrive, they should not be wanting in good gardens.

3. to 13. may be propagated and cultivated in the same manner. [Pallas says that the 4th is easily raised from seed in the Russian gardens.]

The 9th and some of the others must have a moist loamy soil, otherwise they will not thrive. [Clusius relates, that he made the 9th flower in a garden, but that it drooped, and lost much of its native vigour and elegance.]

The 11th not striking its roots so deep into the ground as the officinal yellow Gentian, may be transplanted with less hazard, especially if it be removed with a good ball of earth to the roots. In a strong moist soil this will flower annually.

14. This is commonly propagated by parting the roots, but it must not be often transplanted or parted, in order to have it flower strong; it should have a

loamy soil and a shady situation. It may also be increased by seeds sown in autumn; in a good soil the plants will be strong enough to flower the second year, and these seedling plants will flower much stronger than those which are propagated from offsets.

[This is one of the species best known, and much esteemed for the brilliant azure of its flower, so large in proportion to the size of the plant.

Ray observes, that although it be a native of the highest Alps, yet it readily admits cultivation; and that it was much sought after in his time by gardeners and florists for the beauty of the flower.

The other alpine *Gentianellas* may be increased and treated in the same manner. In common with other alpine plants, these love a pure air, an elevated situation, and a loamy soil, moderately moist; they do not prosper therefore very near London.

Clusius affirms, in particular, that *G. verna* (n. 22.) rejects all culture.]

Several of these (as 28, 29, 30.) growing on spongy ground, it is difficult to cultivate them in gardens. The seeds must be sown in pots, or upon a moist boggy ground in autumn, in the shade; when the plants come up the surface of the ground should be covered with moss, which should be constantly kept moist.

44. and 45. may be increased and treated as n. 14.

[32. The common Centory cannot be cultivated in gardens, according to Bodæus a Stapel. Yet Mr. Ray raised it in his garden from seed, and it grew, flourished, and perfected its seed.]

16. This is propagated by seeds, sown on a hot-bed soon after they are ripe. The plants must be treated in the same manner as other tender annual plants from hot countries. If the seeds be sown in autumn in pots placed in the tan-bed in the stove, they will succeed better than when sown in the spring, the plants will flower early, and good seeds may be obtained.

GENTIANA. See *Orobanchæ*, *Saponaria*, *Sarothra*, *Swertia*.

GENTIANA PERFOLIATA. See *Chlora*.

GENTIANELLA. See *Gentiana* and *Ruellia*.

[GENTIANOIDES. See *Gentiana*.

GEOFFROYA. (So named by Jacquin in honour of Monsieur Geoffroy, Memb. Acad. Par. He was author of *Materia Medica*, and died in 1731.)

Lin. gen. n. 878. Reich. 952. Schreb. 1193.

Jacqu. amer. 207. Juss. 363.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceæ* or *Leguminosæ*.

GENERIC CHARACTER.

CAL. Perianth one-leaved; bell-shaped, half-five-cleft: the two upper divisions diverging, spreading.

COR. Papilionaceous: banner roundish, emarginate, flat, reflex; wings the same length with the banner, blunt, concave; keel compressed, the same length and figure with the wings.

STAM. Filaments diadelphous (simple and nine-cleft) the length of the keel. Anthers roundish.

PIST. Germ roundish. Style subulate. Stigma obtuse.

PER. Drupe ovate, large, with a longitudinal groove on each side.

SEED. Nut subovate, woody, rather flattened, with a longitudinal groove on each side, acute, two-valved.

ESSENTIAL CHARACTER.

Cal. five-cleft. Drupe ovate. Nut flattened.

SPECIES.

1. *Geoffroya spinosa*. Thorny *Geoffroya*.

Lin. spec. 1043. syst. 667. Reich. 3. 485. Jacqu. amer. 207. t. 180. f. 2. pict. 102. t. 262. f. 58.

Umari. Marcgr. bras. 121. Raii hist. 1518. n. 3.

Thorny; leaflets oblong.

2. *Geoffroya inermis*. Smooth *Geoffroya*.

Ait. hort. kew. 3. 52. Swartz prodr. 106. Wright

in philos. trans. 1777. p. 517. t. 10. Woodv.

med. bot. 306. t. 112.

Without thorns; leaflets lanceolate.

* Curtis.

1. This is a thorny tree, says Linneus, with pinnate leaves, and a drupaceous fruit, resembling the peach:

It is described by Jacquin, as an inelegant tree, twelve feet high, upright, branched. Thorns few, awl-shaped, frequently an inch long, thick on the trunk and branches. Leaves pinnate; midrib smooth, grooved above, four inches long; leaflets commonly seven on each side, with an odd one, oblong, blunt, smooth, quite entire. Racemes simple, dense, axillary, three or four inches long. Flowers on very short peduncles, with corollas of a dirty fulvous colour, diffusing widely a most fetid odour. The Drupe does not ill represent the fresh fruit of an Almond, the rind is very slightly tomentose, and of a greenish yellow colour. The pulp is soft, sweet, yellowish, has a nauseous smell, and stains the hands with rust-colour not easily washed out. The nut or stone is whitish, adheres close to the pulp, and contains a white kernel, that has a farinaceous astringent taste. A plant with papilionaceous flowers, and a drupe for a fruit, is a great singularity^a.—Native of Carthage in New Spain.

2. This tree rises to a considerable height, and towards the top sends off several branches: the wood is hard enough to admit of being polished: the external bark is smooth and gray; internally it is black and furrowed. Leaves pinnate^b.

Leaflets opposite, oblong-ovate, or lanceolate, acuminate, smooth above, nerveless beneath, on short petioles. Flowers in clusters, upon large branched spikes. Calyx very slightly five-parted, with short, ovate divisions. Corolla pale rose-colour. Keel of the corolla ovate, spreading, very slightly divided into two parts. The fruit is a large subovate drupe, inclosing a woody nut.—Native of Jamaica^c. Introduced in 1778, by Messrs. Kennedy and Lee^d.

In Jamaica it has the name of Cabbage-bark or Worm-bark tree. The bark, which has a mucilaginous sweetish taste, and a disagreeable smell, was first noticed as a vermifuge by Mr. Peter Duguid; but Dr. Wright, who resided a long time at Jamaica, has communicated the fullest information concerning this tree: according to him, the bark is powerfully medicinal, and its anthelmintic effects have been established at Jamaica by long experience.

It may be given in decoction, syrup, powder or extract; but must be used with caution in small doses at first^e.]

GERANIUM. (From γέρανος, a crane, the fruit having the form of a crane's head and neck.)

Lin. gen. n. 832. Reich. 897. Schreb. 1118. Tournef. 142. Gærtn. t. 79. Cavan. diff. 4. 194. Juss. 268.

Class. 16. 4. Monadelphia Decandria.

Nat. order of Grinales.—Gerania. Juss.

GENERIC CHARACTER.

CAL. five-leaved: leaflets ovate, acute, concave, permanent.

COR. Petals five, obcordate or ovate, spreading, regular.

Neetary five honied glands, fastened to the base of the longer filaments.

STAM. Filaments ten, awl-shaped, connected slightly at the base, spreading at top, shorter than the corolla. Anthers oblong, versatile.

PIST. Germ five-cornered, beaked. Style awl-shaped, longer than the stamens, permanent. Stigmas five, reflex.

PER. Capsule five-grained, beaked, the cells opening inwards, each having a simple naked tail fixed to it.

SEEDS solitary, ovate-oblong.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. five-petalled, regular. Neet. five honied glands, fastened to the base of the longer filaments. Fruit five-grained, beaked: beaks simple, naked, neither spiral nor bearded.

^a Jacquin.

^b Woodville.

^c Wright in phil. transf.

^d Hort. kew.

^e Woodv. & Wright.

* Peduncles one-flowered.

1. Geranium fibricum. Siberian Crane's-bill.
Lin. spec. 957. Reich. 3. 329. Burm. ger. 5.
Gmel. fib. 3. t. 67. Jacq. hort. 1. t. 19.
Peduncles commonly one-flowered, leaves five-parted, acute, leaflets pinnatifid.
2. Geranium sanguineum. Bloody Crane's-bill.
Lin. spec. 958. Reich. 329. Burm. ger. 3.
Huds. angl. 305. Wither. arr. 734. Lightf. scot. 372. Engl. bot. 272. Relb. cant. n. 505.
Hall. helv. n. 930. Pollich pal. n. 655. Fl. dan. t. 1107. Krock. fles. n. 1123. Villars dauph. 3. 381.
α. G. sanguineum maximo flore. Baub. pin. 318. Mor. hist. f. 5. t. 16. f. 17.
G. sanguineum. Ger. emac. 945. 2. Petiv. brit. t. 64. f. 9.
G. 7 hæmatodes. Clus. hist. 2. 102. f. 1. Park. par. 227. 6. Raii hist. 1061. n. 32. syn. 360. 14.
G. gruinum hæmatodes lupinum radice reptatrice. Lob. ic. 1. 660.
C. sextum. Fuchs. hist. 209.
G. sanguineum f. hæmatodes crassa radice. Baub. hist. 3. 478. f. 2.
β. G. Lancastrense. Mill. dict. n. 4.
G. hæmatodes Lancastriense, flore eleganter striato. Dill. elth. 163. t. 163. f. 163. Petiv. brit. t. 64. f. 11. Raii syn. 360. n. 16. hist. 1061.
Peduncles one-flowered, leaves five-parted, trifid, orbiculate.
- [3. Geranium spinosum.
Lin. syst. 618. Reich. 329. mant. 98. Burm. afr. 18. t. 31. ger. 16. n. 2. Cavan. diff. 195. t. 75. f. 2.
Peduncles one-flowered, stem fleshy, knobbed, spines solitary, strict.
4. Geranium emarginatum.
Lin. syst. 618. suppl. 306.
Peduncles one-flowered, leaves ovate, emarginate, crenate.
* * Peduncles two-flowered, shrubby.
5. Geranium anemonefolium. Smooth Crane's-bill.
L'Herit. geran. n. 6. t. 36. Ait. hort. kew. 2. 432. Curt. magaz. 206.
G. palmatum. Cavan. diff. 4. 216. t. 84. f. 2.
Leaves palmate, leaflets pinnatifid; stem shrubby.]
6. Geranium macrorrhizum. Long-rooted Crane's-bill.
Lin. syst. 616. mant. 434. Reich. 321. hort. cliff. 343. 4. Burm. ger. 10. Jacq. ic. 1. t. 134. collect. 1. 258.
G. batrachoides odoratum. Baub. pin. 318. Mor. hist. 2. 514. f. 5. t. 16. f. 15. Raii hist. 1061.—longius radicatum. Baub. hist. 3. 477. Ger. emac. 942. 4.
Calyxes inflated, petals entire, pistil very long, scape dichotomous.
* * * Peduncles two-flowered, perennial.
- [7. Geranium canescens. Silky-leaved Crane's-bill.
L'Herit. geran. n. 12. t. 38. Ait. hort. kew. 2. 433.
Leaves subpeltate, five-parted, canescent underneath, lobes gasbed, petals emarginate.
8. Geranium incanum. Hoary Crane's-bill.
Lin. spec. 957. Reich. 327. amoen. 6. 91. Burm. ger. n. 26. Pluk. phyt. t. 186. f. 4. Raii hist. 3. 513. n. 28.
Calyxes awned, petals entire, arils hirsute, leaves subdigitate, pinnatifid.
9. Geranium tuberosum. Tuberous-rooted Crane's-bill.
Lin. spec. 953. Reich. 321. hort. cliff. 343. 3. Burm. ger. 9. Krock. fles. n. 1197. Baub. hist. 3. 474. f. 3. Dod. pempt. 61. Raii hist. 1060. 26. Ger. 795. emac. 940. Park. parad. 228. t. 227. f. 4.
G. tuberosum majus. Baub. pin. 318.
G. bulbosum. Lob. ic. 661.—vulgare. Park. theat. 706.
Leaves many-parted, segments linear, subdivided, obtuse.]
10. Geranium phæum. Dark-flowered Crane's-bill.
Lin. syst. 616. spec. 953. Reich. 321. Burm. ger. 11. Jacq. vind. 122. Hall. helv. n. 934. Huds. angl. 301. Wither. arr. 726. Fl. dan. t. 987. Krock. fles. n. 1108?

G. patu-

- G. patulum.* Villars dauph. 3. 371?
G. phæo f. pullo flore. Clus. hist. 2. 99. 1. Baub. hist. 3. 477. f. 3. Raii hist. 1062. 35. Park. theat. 704. 3.
G. batrachoides pullo flore. Ger. emac. 942. f. 3.
 Peduncles solitary, opposite to the leaves, calyxes slightly awned, stem erect, petals waved.
11. *Geranium fuscum.*
 Lin. syst. 616. Reich. 322. mant. 97. Park. theat. 704. Lob. ic. 1. 661. 1.
G. montanum fuscum. Baub. pin. 318.
G. fuscum. f. maculatum. Park. parad. 229. n. 7. Ger. 799. f. 1. emac. 945. f. 1.
G. phæum flore reflexo. Baub. hist. 3. 477. f. 2. Raii hist. 1063. n. 36.
G. montanum. Dod. pempt. 64. f. 2.
 Peduncles two-flowered, opposite to the leaves, in pairs, stem patulous, petals quite entire.
- [12. *Geranium reflexum.* Purple-flowered Crane's-bill.
 Lin. syst. 616. Reich. 322. mant. 257.
G. flore purpureo reflexo, italicum. Barrel. ic. 39.
 Peduncles and leaves alternate, petals reflex, lacinated, the length of the calyx, which is awnless.
13. *Geranium lividum.* Wrinkled-leaved Cranes-bill.
 L'Herit. geran. n. 18. t. 39. Ait. hort. kew. 2. 434. Hall. helv. n. 935.
G. phæum. Villars dauph. 3. 369?
 Leaves half-seven-lobed, gashed, calyxes simple, hairy, petals flat, somewhat waved.]
14. *Geranium nodosum.* Knotty Crane's-bill.
 Lin. spec. 953. syst. 616. Reich. 322. mant. 434. Burm. ger. 7. Hudf. angl. 301. Wither. arr. 727. Villars dauph. 3. 369. Baub. pin. 318.
G. 5, 6 Plateau. Clus. hist. 2. 101. Raii syn. 361.
 Petals emarginate, stem-leaves three-lobed, entire, serrate, lucid underneath.
15. *Geranium striatum.* Streaked Crane's-bill.
 Lin. spec. 953. Reich. 323. amoen. 4. 282. Burm. ger. 6. Curt. magaz. 55. Hall. helv. n. 936. Krock. files. n. 1110.
G. romanum versicolorum f. striatum. Park. parad. 229. t. 227. f. 7. Mor. hist. 2. 516. f. 5. t. 16. f. 24. Raii hist. 1063. n. 37.
 Leaves five-lobed, lobes widened in the middle; petals two-lobed, netted-veined.
16. *Geranium argenteum.* Silvery-leaved Crane's-bill.
 Lin. spec. 954. Reich. 324. amoen. 4. 323. Burm. ger. 8. Villars dauph. 3. 375.
G. argenteum alpinum. Baub. pin. 318. Pluk. phyt. t. 186. f. 3.
G. longius radicum. Pona bald. t. 342. Clus. hist. 2. 342. Segu. veron. 1. 471. t. 10.
G. argenteum montis Baldi. Baub. hist. 3. 474. Raii hist. 1061. n. 30.
 Petals emarginate, leaves subpeltate, seven-parted, trifid, tomentose-filky.
17. *Geranium maculatum.* Spotted Crane's-bill.
 Lin. spec. 955. Reich. 324. Gron. virg. 2. 101. Burm. ger. 17. Dill. elth. 158. t. 132. f. 159. Raii hist. 3. app. 245. n. 18.
 Stem dichotomous, erect; leaves five-parted, gashed, the uppermost sessile.
18. *Geranium pratense.* Meadow Crane's-bill.
 Lin. spec. 954. Reich. 324. fl. suec. n. 618. hort. cliff. 344. n. 6. Gertn. fruct. 384. t. 79. Burm. ger. 16. Hudf. angl. 302. Wither. arr. 728. Curtis lond. 4. Lightf. scot. 368. Relb. cant. n. 498. Hall. helv. n. 931. Scop. carn. n. 852. Pollich pal. n. 648. Leers herborn. n. 537. D'Affo arrag. 634. Krock. files. n. 1113.
G. batrachoides, Gratia Dei germanorum. Baub. pin. 318.
G. batrach. Ger. 797. 2. emac. 943. 1. Baub. hist. 3. 475. Raii hist. 1061. n. 33. syn. 360. Petiv. brit. t. 65. f. 7. Mor. hist. f. 5. t. 16. f. 14. Matth. 857. Lob. ic. 1. 659. 2.—flore purpureo. Park. parad. 228. t. 227. f. 5.
G. quintum. Fuchs. hist. 208.
G. 3. batrach. majus. Clus. hist. 2. 100. 1.
 Leaves subpeltate, many-parted, wrinkled, acute, petals entire.

- [19. *Geranium palustre.* Marsh Crane's-bill.
 Lin. spec. 954. syst. 617. Reich. 323. amoen. 4. 323. Burm. ger. 13. Pollich pal. n. 647. Leers herborn. n. 536. Fl. dan. t. 596. Krock. files. n. 1112.
G. batrachoides palustre, flore sanguineo. Dill. elth. 160. t. 134. f. 161.
G. sanguineum majus. Best. eyf. vern. 1. t. 9. f. 2.
 Peduncles very long, declined, leaves five-lobed, gashed, petals entire.
20. *Geranium aconitifolium.* Aconite-leaved Crane's-bill.
 L'Herit. geran. n. 26. t. 40. Ait. hort. kew. 2. 435.
G. rivulare. Villars dauph. 3. 372. t. 40.
 Leaves subpeltate, seven-parted, petals entire, veiny-lined.]
21. *Geranium sylvaticum.* Wood-Crane's-bill.
 Lin. spec. 954. Reich. 323. fl. lapp. n. 266. suec. n. 617. hort. cliff. 344. n. 7. Burm. ger. 12. Hudf. angl. 302. Wither. arr. 727. Engl. bot. 121. Hall. helv. n. 932. Scop. carn. n. 851. Leers herborn. n. 535. Gunn. norv. n. 73. Fl. dan. t. 124. Krock. files. n. 1111. Villars dauph. 3. 373.
G. palustre. Rose elem. app. 441. t. 1.
G. batrachoides folio aconiti. Baub. pin. 317.
G. batrach. Ger. 797. 1.—montanum. Raii hist. 1062. n. 34.
G. batrach. alterum. Ger. emac. 942. 2.
G. 2. batrach. minus. Clus. hist. 2. 99. 2.
 Leaves subpeltate, five-lobed, gash-ferrate, stem erect, petals emarginate.
22. *Geranium pyrenaicum.* Mountain Crane's-bill.
 Lin. syst. 617. Reich. 320. mant. 97 & 257. L'Herit. geran. n. 31. Ait. hort. kew. 2. 436. Hudf. angl. 302. Wither. arr. 729. Curtis lond. 3. 42. Burm. ger. 27. Ger. prov. 434. n. 12. t. 16. f. 2. Villars dauph. 3. 376.
G. perenne. Hudf. angl. ed. 1. 265. Mill. dict. n. 11.
 Leaves rounded, five-lobed or three-lobed, gashed, petals two-lobed.
 *** Peduncles two-flowered, annual.
- [23. *Geranium molle.* Common Crane's-bill or Dove's-foot.
 Lin. spec. 955. syst. 617. Reich. 326. Burm. ger. 21. Hudf. angl. 303. Wither. arr. 731. Curtis lond. 2. 50. Lightf. scot. 370. Hall. helv. n. 939. Scop. carn. n. 850? Pollich pal. n. 651. Leers herborn. n. 539. Fl. dan. t. 679. Krock. files. n. 1118. Villars dauph. 3. 377.
G. columbinum villosum petalis bifidis. Vaill. par. 79. t. 15. f. 3.
G. columbinum. Ger. Raii hist. 1059. 19. syn. 359. 10.
 Peduncles and floral leaves alternate, petals bifid, calyxes awnless, stem somewhat erect.
24. *Geranium rotundifolium.* Round-leaved Crane's-bill.
 Lin. spec. 957. syst. 618. Reich. 328. fl. suec. n. 621. hort. cliff. 344. n. 9. Burm. ger. 20. Hudf. angl. 303. Wither. arr. 732. Engl. bot. 157. Hall. helv. n. 941. Scop. carn. n. 846. Leers herborn. n. 542. Krock. files. n. 1121. Villars dauph. 3. 379.
G. fol. malvæ rotundo. Baub. pin. 318.
G. alterum. Fuchs. hist. 205.
G. fol. rotundo, &c. Baub. hist. 3. 473.
Pes columbinus. Dod. pempt. 61. 2.
 Petals almost entire, equal to the calyx, which is somewhat awned; leaves kidney-shaped, lobed, gashed, sinuses glandular.
25. *Geranium pusillum.* Small-flowered Crane's-bill.
 Lin. spec. 957. syst. 618. Reich. 328. mant. 435. Burm. ger. 23. Cavan. diff. 202. t. 83. f. 1. Hall. helv. n. 940.
G. parviflorum. Curt. lond.
G. malvæfolium. Scop. carn. n. 847.
G. columbinum majus, flore minore cæruleo. Raii hist. 1059. syn. 358. Petiv. brit. t. 64. f. 4. 3. Vaill. par. t. 15. f. 1.
 Petals emarginate, arils even, with hairs pressed close, stem subpubescent.
26. *Gera-*

26. *Geranium lucidum*. *Shining Crane's-bill* or *Dove's-foot*.
Lin. spec. 955. *Reich.* 325. *fl. suec.* n. 620. *Huds. angl.* 304. *Wither. arr.* 730. *Lightf. scot.* 370. *Relb. cant.* n. 502. *Engl. bot.* t. 75. *Burm. ger.* 19. *Hall. belv.* n. 942. *Pollich pal.* n. 670. *Fl. dan.* t. 218. *Villars dauph.* 3. 375. *Krock. files.* n. 1116. *Baub. hist.* 3. 481.
G. lucidum faxatile. *Baub. pin.* 318.
G. faxatile. *Thal. herc.* 44. t. 5. *Park. theat.* 707. f. 9. *Ger. emac.* 938. n. 3. *Raii hist.* 1060. n. 25. *syn.* 361. *Petiv. brit.* t. 64. f. 12.
G. faxat. lucidum. *Mor. hist.* f. 5. t. 15. f. 6.
G. rotundifolium faxatile montanum. *Col. ecphr.* 1. 138. t. 137.
Calyxes pyramidal, angular, raised in wrinkles, leaves five-lobed, rounded.
27. *Geranium columbinum*. *Long-stalked Crane's-bill*.
Lin. spec. 956. *syn.* 617. *Reich.* 327. *fl. suec.* n. 623. *Burm. ger.* 22. *Huds. angl.* 304. *With. arr.* 731. *Lightf. scot.* 371. *Engl. bot.* 259. *Hall. belv.* n. 938. *Scop. carn.* n. 849. *Pollich pal.* n. 653. *Leers herborn.* n. 540. *Krock. files.* n. 1119. *Villars dauph.* 3. 381.
G. columb. fol. dissectis, pediculis florum longissimis. *Raii syn.* 359. *Vaill. par.* t. 15. f. 4. *Petiv. brit.* t. 64. f. 8.
Peduncles longer than the leaf, leaves five-parted, multifid, calyxes five-cornered, awned, arils smooth.
28. *Geranium incanum*.
Lin. spec. 957. *Reich.* 327. *amoen.* 6. 91. *Burm. ger.* 26. f. 26. *Pluk. phyt.* t. 186. f. 4.
Peduncles two-flowered, calyxes awned, petals entire, arils hirsute, leaves subdigitate, pinnatifid.
29. *Geranium dissectum*. *Jagged Crane's-bill*.
Lin. spec. 956. *syn.* 618. *Reich.* 327. *amoen.* 4. 282. *fl. suec.* n. 622. *Burm. ger.* 15. *Huds. angl.* 304. *Wither. arr.* 732. *Lightf. scot.* 371. *Relb. cant.* n. 503. *Curt. lond.* *Retz. obs.* 1. 22. *Hall. belv.* n. 937. *Scop. carn.* n. 848. *Pollich pal.* n. 652. *Leers herborn.* n. 541. *Fl. dan.* t. 936. *Villars dauph.* 3. 380. *Krock. files.* n. 1120.
G. columbinum majus dissectis foliis. *Ger. emac.* 938. n. 2. *Raii hist.* 1059. n. 21. *syn.* 359. *Petiv. brit.* t. 64. f. 6.
G. majus, fol. imis longis ad usque pediculum divisis. *Vaill. par.* t. 15. f. 2.
G. annuum minus fol. laciniatis & pediculo longissimo. *Mor. hist.* f. 5. t. 15. f. 3.
Peduncles shorter than the leaf, leaves five-parted, trifid and multifid, petals emarginate, arils villose.
30. *Geranium carolinianum*. *Carolina Crane's-bill*.
Lin. spec. 956. *Reich.* 326. *mant.* 434. *Burm. ger.* 24. *Gron. virg.* 101. 1. *Retz. obs.* 1. 23. *Dill. elth.* 162. t. 135. f. 162.
Leaves five-parted, gashed, calyxes awned, petals emarginate, arils hirsute.
31. *Geranium bohemium*. *Bohemian Crane's-bill*.
Lin. spec. 955. *Reich.* 324. *amoen.* 4. 323. *Burm. ger.* 24. *cent.* 176. *Krock. files.* n. 1117. *Dill. elth.* 159. t. 133. f. 160.
G. bohemium batrachoides annuum. *Raii hist.* 1063. 39. *Mor. hist.* f. 5. t. 15. f. 1.
Petals emarginate, arils rough with hairs, cotyledons trifid, with the middle cleft truncate.
- [32. *Geranium robertianum*. *Stinking Crane's-bill*, or *Herb Robert*.
Lin. spec. 955. *syn.* 617. *Reich.* 325. *mat. med.* 165. *fl. suec.* n. 619. *Burm. ger.* 18. *Huds. angl.* 305. *Wither. arr.* 729. *Curtis lond.* 1. 52. *Lightf. scot.* 369. *Relb. cant.* n. 504. *Hall. belv.* n. 943. *Scop. carn.* n. 845. *Pollich pal.* n. 649. *Fl. dan.* t. 694. *Krock. files.* n. 1115. *Villars dauph.* 3. 373. *Blackw. t.* 480.
G. robertianum primum. *Baub. pin.* 319. *Ger.* 794. & 800. 5. *emac.* 939 & 945. 5. *Dod. pempt.* 62. *Lob. ic.* 1. 657. 2. *Raii hist.* 1058. n. 17. *syn.* 358. *Petiv. brit.* t. 55. f. 5. *Mor. hist.* 3. 5. t. 15. f. 11.—*murale*. *Baub. hist.* 3. 480.—*vulgare*. *Park. theat.* 710. 8.
G. tertium. *Fuchs. hist.* 206.]

β. *G. lucidum faxatile, foliis Geranii Robertiani*.
Raii syn. 358. *Petiv. brit.* t. 65. f. 6.

Leaves quinate and ternate, gashed, calyxes ten-angled.
 DESCRIPTIONS, &c.

The genus of *Geranium*, as constituted by Linneus, having become very unwieldy by modern discoveries, it is found very convenient to divide it; and a division is commodiously made from this remarkable circumstance; namely, that in some species all the ten filaments are fertile, whilst in others three or even five of them are castrated, as Linneus speaks; that is, are destitute of anthers. Hence three genera are now constituted out of one; *Erodium*, with five fertile stamens only, *Pelargonium* with seven, and this, retaining the old name, with all the ten fertile. There are also other marks of discrimination recited in their respective essential characters. These three artificial genera or families, however, form but one natural family, agreeing in their five-leaved calyxes, their five-petalled corollas, their pentacocous rostrated fruits, and their general habit and structure. They also agree in their inflorescence, the peduncles being curved downwards before flowering time, but when the flowers are about to open, the general peduncle first, and then each pedicel becoming erect.

1. Root perennial. Stems herbaceous, annual, diffusely dichotomous, jointed, almost round and smooth. At the divisions on each side is a lanceolate acuminate stipule. Leaves opposite, five-parted, divided into unequally pinnatifid acute segments. Peduncle longer than the leaves, from the axils, with two bractes at top. Calycine leaflets somewhat hirsute, with short awns. Petals pale purplish, without any streaks, scarcely longer than the calyx, either quite entire, or slightly emarginate*.

Native of Siberia. Cultivated before 1768 by Mr. Miller, who received the seeds from Linneus. It flowers in June.

2. [Root perennial, somewhat woody. The whole plant set with white spreading hairs. Stems a foot or more in height, lax, spreading, branched, round, jointed, swelling at the joints. Leaves opposite, deeply lobed and cut, sometimes seven-parted, the segments linear, the upper surface rough, the lower hairy, the edge also is hairy and entire. Peduncles axillary, much longer than the leaves, hairy, with a joint and two small bractes more than half way down. Calycine leaflets oval, with membranaceous reddish edges, and terminated by a short red awn. Petals obcordate, very large, pale red, with deeper veins; hairy at the base. The whole plant frequently turns red or purple after flowering^b.

Native of many parts of Europe, in thickets and rocky pastures, flowering most part of the summer, and often introduced into gardens as an ornamental plant.]

β. Miller insists that the Lancashire Bloody Crane's-bill is a distinct species, the plants which he raised from seeds having always continued the same. The stalks are shorter, and spread flat on the ground; the leaves are much less, and not so deeply divided; and the flowers are much smaller, of a pale colour, marked with purple. It grows naturally in Lancashire and Westmoreland.

[There are other varieties of this species. One is mentioned by Ray, with larger, paler leaves, more deeply divided. And a second; in English Botany, sent by Mr. Davall from Switzerland; which has two flowers and four bractes from each joint, the calyx awned, the petals heart-shaped, crimson, veined, turning blue in decay, the seed-cases nearly globose, bristly at their summit, and the beak downy. The stem, flower-stalks, calyx and back of the leaves are clothed with white slender spreading hairs, the upper side and margin of the leaves with short depressed bristles.

3. This is a low succulent plant. Root simple, scarcely fibrous. Stem suffruticose, erect, branched, fenced all round with broad, smooth, irregular knots

* Jacquin. ^b Linn. Engl. bot. Wither. Stokes, Woodw. Mss.

or tubercles, from the centre of which arises a very long, sharp, black spine. Leaves opposite, subsessile, wedge-shaped, reflex, sinuate-crenate. Flowers solitary, peduncled. Calyx awned. Corolla purple, spreading, larger than the calyx; petals quite entire. Native of the Cape of Good Hope^c.

4. This is allied to *Geranium glaucum* (Pelargonium glaucum). Native of the Cape of Good Hope. Observed by Thunberg^d.

5. The whole plant is remarkably smooth, whence it had originally the name of *laevigatum*. From a thick root, arises a very short stem, the thickness of a finger and succulent, whence spring branches two feet long, with very long leafless internodes. Root and stem-leaves numerous, subpeltate-palmate, five-lobed, lobes pinnate, pinnules gashed, having little notches ending in a very short awn: petioles longer than the leaves, thick, red, declining: stipules membranaceous, reddish, kidney-form. Upper leaves opposite, on petioles gradually shorter, subhastate-three-lobed; lobes pinnate, acute, the middle one longest: stipules short, ovate, concave. Flowers in the forks, and at the ends of the branches, on erect peduncles. Involucre four-leaved; leaflets ovate, short. Calyx ten-streaked, awned. Corolla pale blue, spreading, an inch and half in diameter; petals quite entire. Capsules smooth^e.

Native of Madeira. Introduced by Mr. Francis Masson in 1778. It flowers from may to september^f.

6. Root perennial, the thickness of a finger, becoming woody, dark purple on the outside, round, single or branched, having many long, round, thickish fibres. Hence springs a bundle of leaves, and several almost upright stems or rather scapes. These are all very soft and smooth, like the leaves of Marsh Mallow, with a very short close down. Most of the leaves are large subpeltate-seven-parted, on very long petioles; lobes oblong, a little narrowed towards the base, ferrate-toothed, the edges tinged with pale red; the petiole round, strong, erect; as are also the scapes, which are somewhat higher than the leaves, silky-tomentose, quite simple, leafless, terminating in two peduncles, or else simply two-flowered. Bractes two, gash-multifid, at the foot of the peduncles: and others at the pedicels which are simple, entire, sessile, and form a sort of involucre. Flowers large, elegant, deep red^g, or bright purple. The whole plant, when rubbed, emits an agreeable odour. [Native of Italy. Cultivated in the botanic garden at Oxford in 1658. It flowers in may and june.

7. Native of the Cape of Good Hope, where it was observed by Mr. Francis Masson. Introduced in 1787. It flowers in may and june^h.

8. Herbaceous. Stems filiform, somewhat knotty, having bristle-shaped scales at the knots. Lower leaves scattered, prostrate, on long petioles, five-parted, multifid, hoary underneath, with linear segments. Peduncles scattered, either opposite to the petioles or axillary, long, with bristle-shaped bractes, either all two-flowered, or else the upper ones four-flowered. Calyxes hairy. Beaks shortⁱ. Native of the Cape of Good Hope. Cultivated in 1704, by the Dutchess of Beaufort^k.

9. Root tuberous. Plant low, scarcely branched. Leaves petioled, divided into six larger segments, which are unequally subdivided into linear obtuse segments; at top, where the peduncles spring forth, subsessile. Flowers very abundant, terminating. Calyx awned^l.—Native of Italy and Silesia. Cultivated in 1596, by Gerarde. It flowers in may^m.

10. Stem upright, nearly cylindrical, from eighteen inches to two and even three feet in height, below woolly, and having a few long shining hairs on them; joints large, commonly tinged with red. Leaves soft, the younger ones silky, ribbed; the lower on long petioles in pairs, the upper solitary;

lobes mostly five, unequally toothed, the lateral ones lobed: the lower leaves have frequently six or seven lobes, and the uppermost only three or four. Peduncles very slender. Bractes flaccid, yellow, ovate-lanceolate, at the base of each peduncle. Calyx soft, thick set with short hairs terminated by little globules, interspersed with a few long woolly hairs; the leaflets are marked with three lines, and terminated by little blunt callous substances. Petals ovate, somewhat five-cornered, acuminate, waved at the edge, blackish purple, shining; claws white, marked with five lines, and woolly. Filaments purple, broad and woolly at the base, slightly united by means of five glands. Anthers whitish, with purple lines. Pollen greenish yellow. Germ woolly. Style green, shorter than the stamens till the time of flowering. Arils hairy. Seeds oblong-ovateⁿ. Native of Switzerland, Hungary, Styria, England about Clapham and Ingleton in Yorkshire, Tovel near Maidstone.

11. Linneus separates this unwillingly from *G. phæum*, with which it agrees in many circumstances, and particularly in having the whole corolla spread out and dark coloured. It differs, however, in having the leaves rigid, the corolla more reflex and smaller, the petals suborbiculate, mucronate, quite entire, flat, the peduncles not solitary, two-flowered, but two distinct. Native of the South of Europe^o.

12. Stem a foot high, dichotomous or bifid, pubescent, pubescent. Upper leaves alternate, five-lobed, wrinkled, tomentose, not spotted. Flowers drooping, on peduncles opposite to the leaves. Calyx awnless. Petals red, somewhat gashed, not longer than the calyx, reflex, gaping at the base. Stamens as long as, or longer than the corolla, nodding. Anthers yellow, with a brown edge. Native of Italy^p. Cultivated in 1758, by Mr. Miller.

13. This is allied to the two last. The stem is the same; the lower leaves are conjugate, the upper ones solitary, narrower, deeply seven-cleft, with trifid ferrate lobes. Stipules hirsute, green; those of the stem large, on the petioles small. Flower much larger, flat; the petals marked with a very small star, acuminate, broad, perfectly flat, elegantly plaited and ferrate at the edge, pale blue (gris de lin) with a livid centre. Root thick, woody, rufous. Native of Switzerland, about Aigle, &c.^q. Introduced in 1775, by Drs. Pitcairn and Fothergill.

14. This is an herbaceous plant, having knobs like little bulbs at the origin of the branches and peduncles; whence the name. Lower leaves petioled, three-lobed, ovate-acuminate, ferrate; the upper ones smaller, subsessile, the middle segment larger than the others. Peduncles axillary, very long, simple. Calyx streaked, awned. Corolla purple. Capsules smooth^r.

Stems smooth, shining, swelled at the joints. Lower leaves five-lobed, stem-leaves three-lobed, opposite; lobes lanceolate, divaricate, entire at the base, irregularly ferrate upwards, each marked with three strong nearly parallel nerves, and clothed with a few short stiff hairs arising from glands. Stipules and bractes alike, small and pointed. Peduncles short. Leaflets of the calyx-awned, smooth. Petals red, obscurely and regularly crenate^s.

Native of Dauphiné and the mountains of Cumberland, flowering in july and august.^t

15. Root perennial, sending up many branching stalks a foot and half high. Leaves light green, those on the lower part of the stalk have five lobes, and stand upon long foot-stalks; those on the upper part have but three lobes, sit closer to the stalks, and are sharply indented on the edges. Peduncles long and slender. Petals obtuse, deeply indented at top, of a dull white, finely reticulated with many purple veins. [The lobes of the leaves are gashed, and have a ferruginous or purplish brown spot at their base. Calyxes awned^u.

^c Cavanilles, Burm.

^f Hort. kew.

^l Burm.

^d Linn. suppl.

^g Jacquin.

^k Hort. kew.

^m Hort. kew.

^e Cavanilles.

^h Hort. kew.

ⁱ Burm.

ⁿ With. Woodw. Mss. Haller.

^p Ibid.

^q Woodw. Mss.

^o Linn. mant.

^r Burman.

^s Linn. amoen.

Native of Italy. Cultivated in 1629^a. It flowers in may and june.]

16. Root perennial, thick. Leaves on long petioles, silvery and shining. Flower-stalks four or five inches high, with one or two small leaves on them, like those below, but sessile; and terminated by two pretty large pale flowers, with entire petals that spread open flat. It flowers in june. [Native of monte Baldo, and Dauphiné.]

17. Root perennial. Stems several, about a foot high, or more, dividing by pairs; from the middle of the divisions come out the peduncles, which are pretty long and naked, each sustaining two pale purple flowers, with entire petals. It flowers in june. Native of Carolina and Virginia. [Cultivated in 1732, by James Sherard; M.D.^x]

18. Root perennial, sending up many stalks, which rise near three feet high, [forked, tinged more or less with red; hairs on the upper branches white, terminated by minute dark red globules. Leaves on long foot-stalks, seven or five-lobed, these again lobed, the latter deeply toothed, hairy, marked beneath with strong veins; divisions of the upper leaves almost linear. Bractes four, lanceolate, acute. Flowers mostly two, on very short downy peduncles. Calycine leaflets lanceolate, ribbed, membranaceous at the edges, thick set with fine white hairs tipped by scarlet globules, and ending in an awn. Petals very large, inversely ovate, marked with from seven to nine whitish lines, and a little hairy at the base. Filaments very broad, and somewhat concave at the base; the anthers are purple, and the pollen is purple^y.] The common colour of the petals is a fine blue, but it varies to white, and sometimes to variegated or striped. The flowers appear in may and june. Native of meadows, in most parts of Europe.

19. The branches of this are extremely divaricated, bifariously and obtusely angular. The petals are villose at the base, and are marked with three brown nerves.—It may be distinguished from *G. sylvaticum* (n. 21.), which it resembles very much in the leaves, by the superior length of the peduncles, which are also recurved before the flowers open, and are not erect, but declined; the petals likewise are entire, not emarginate.—Native of Germany, Russia, Denmark^z. Cultivated in 1732, by James Sherard, M.D.^a

20. Native of Switzerland and Dauphiné. Introduced in 1775, by Drs. Pitcairn and Fothergill. It flowers in may^b.

Stems smooth, scarcely a foot high, forked. Lower leaves seven-lobed or seven-parted, on foot-stalks two inches long; upper five-lobed or five-parted, subsessile; uppermost quite sessile, all pubescent on both sides, subdivided, and the subdivisions toothed: they are strongly veined underneath. Stipules in pairs at the origin of each branch. A pair of bractes also to each peduncle, which is downy. Calycine leaflets ribbed, hairy, awned. Petals white, or slightly tinged with pale purple, marked with dark purple lines. Anthers violet. The ends of the calyx, the bractes, and the upper part of the peduncles are also purple.

21. Stems two or three feet high, covered with reflexed hairs, much branched. Lower leaves seven-lobed, middle five-lobed, upper three-lobed, sessile, all slightly hairy, pale beneath, and veiny; the segments terminate in small fleshy glands. Peduncles sometimes with more than two flowers. Bractes four, awl-shaped, small. Calycine leaflets ribbed, membranaceous at the edge, mucronate; hairs on these, the peduncles, and the edges of the leaves, ending in small globules. Petals large, purple, (sometimes white, or variegated with white) slightly notched at the end, a little woolly at the base. Stamens all nearly equal. Aril hairy, with a brown elevated keel, but not rugged^c.

^a Hort. kew.

^z Linn.

^x Ibid.

^y Hort. kew.

^c Wither. Woodw. Mss. Engl. bot.

^b Ibid.

Native of mountainous woods and thickets in many, particularly the northern parts of Europe. With us in Durham, Westmoreland, Cumberland, Lancashire and Yorkshire. About Aysgarth Force, Wensleydale; near Hales Owen in Shropshire; Holt wood in Leziate, near Lynn, Norfolk, &c. It flowers in june and july.

22. This species is twice as large as the common fort, (n. 23.) and always nearly upright. Stem hairy, forked twice or thrice. Leaves hairy; the lower generally seven-lobed, these again trifid, with rounded or blunt divisions, the middle one frequently crenate. The upper leaves are mostly three-lobed, the lobes trifid, entire, the segments more acute than in the lower leaves, and the lobes more patent; they are often red at the edge. Peduncles solitary, from the forks, above from the bosom of the leaves, than which they are longer. Bractes four, acute. Calycine leaflets broad and short, terminated by a red gland. Petals as long again as the calyx, purple, deeply cloven, the segments roundish and entire. The five outer filaments are shorter than the other five, and have abortive anthers. Aril even, sharply keeled, scarcely pubescent^d.

Native of the South of France, the Pyrenees, and England. Near London about Chelsea, Brompton and Battersea; near Enfield, Oxford, Bingley and Keighley in Yorkshire.

23. Stems procumbent, round, reddish, from nine inches to a foot in length, villose, branched. Root-leaves roundish, hoary, and veiny underneath, deeply divided into seven segments, which are jagged: stem-leaves alternate, divided into fewer, narrower and more pointed segments. Stipules at each joint four, membranous and withering. Peduncles the length and form of the petioles, opposite to them, and bifid: pedicels nearly three times shorter, with smaller stipules, some of the hairs on which appear glandular when viewed with a glass. Calycine leaflets ovate, three-ribbed, hairy, unequal, terminated by a reddish and somewhat blunt point. Petals purple, obcordate, a little longer than the calyx; with small claws edged on each side with hairs. Filaments unequal, broad at bottom, not perceptibly united. Anthers blue. Style with glandular hairs. Seeds smooth, covered with a wrinkled aril.

G. molle when growing detached is procumbent, but among other plants it is drawn upright. It varies much in size, and the flowers vary in colour through many gradations of purple to pale red and white^e.

The peduncles alternating with the floral leaves, and the stem and branches clothed with long soft hairs standing at right angles with the stalk, sufficiently distinguish this from the *rotundifolium*, with which it is frequently confounded^f.

It is the most common of all our *Geraniums*, on dry banks, under walls, in corn fields, and in pastures: beginning to flower in april, and continuing through the summer.

24. Stems much branched, straggling, but scarcely prostrate. Leaves opposite. Peduncles alternate on the stem, and arising from the axil of a leaf, which is always smaller, and on a shorter foot-stalk than its opposite. Stem and branches covered with a very short down, which feels extremely soft like velvet, when drawn through the fingers. The leaves are rounder, and of a paler colour; the seeds are dotted, so as to appear reticulated. Hairs on the aril spreading. These marks distinguish it from the foregoing^g.

The filaments are clearly distinct at the base. The petals are flesh-coloured or purple, varying to white, emarginate or obcordate. Mr. Woodward does not think that the division of the petals is to be at all depended on. When fresh gathered it has a pretty strong scent of musk, but it soon goes off^h.

^d Wither. Stokes, Curtis, Engl. bot.

^e Woodw. Mss.

^c Curtis.

^z Ibid. & Engl. bot.

^h Withering.

On walls, roofs, banks, and in sandy pastures, about Islington, Hackney, Battersea, Wandsworth, Mortlake, Kew, &c. near London; Church Brampton in Northamptonshire; about Bath and Bristol; in Suffolk common.

25. Stems spreading, about a foot long, pale green or sometimes reddish, very slightly downy, branched. Leaves roundish, seven-lobed; lobes trifid, obtuse, some of them more deeply divided, the sinuses rather acute; veiny, villose, soft, pale green; the root-leaves on very long petioles, the stem-leaves opposite, unequal, nearly as long as the peduncles; their lobes more acute. Stipules lanceolate, broad at bottom, red, shining; segments sharp, edged with hairs. Flowers very small, purplish blue, on peduncles from the axils, about an inch long. Bractes like the stipules, but smaller. Calycine leaflets striated, covered with hairs which point upwards; white on the edge, the two outer ones wider than the rest. Corolla a little larger than the calyx, bell-shaped and open; petals obcordate, emarginate. Filaments five longer, with ovate, blue anthers; five shorter and sterile. Seeds kidney-shaped, smooth, reddish; aril pale brown, even, with white hairs pressed close to it.

It differs from the *molle* in having the leaves more divided, of a paler and more yellow colour; the flowers much smaller, of a bluer and less brilliant hue; the stems scarce perceptibly hairy, or but slightly pubescent: the leaves in general grow opposite, but frequently not so towards the top of the stem, and are more open behind: the fertile stamina are never more than five; and the aril is not transversely wrinkled as in the *molle*, but comparatively smooth. It forms a larger tuft than the *molle*, and sometimes varies with white flowers, as that does. It is also equally common in many places; particularly on the west side of London, in neglected gardens and fallow fields; flowering in June and July¹.

Probably small varieties both of *molle* and *rotundifolium* have been taken for this. The figure, in the third edition of Ray's synopsis, by Dillenius, seems to be one of the latter. There are two specimens in the Linnean herbarium, one of which is clearly so; the other appears to be distinct².

26. Stems and leaves smooth and shining as if varnished, whence its significant trivial name; they are, however, slightly hairy. Leaves kidney-shaped, mostly five-lobed, these again divided half way into three lobes, the middle one having usually three notches, the side ones entire: it varies, however, from this disposition. In rocky situations the leaves are only half an inch broad, and not so much divided. Flowers on short spreading peduncles, with very minute bractes. Petals rose-coloured, emarginate. The aril has several rugged longitudinal ribs, and is hairy at top. The whole plant is sometimes red³. Native of most parts of Europe, on walls, roofs, banks, in rocky and shady places, and in a chalky soil among corn. It flowers from June to August.

27. Slender, mostly procumbent, with small, rigid, close-pressed hairs. Leaves a little hairy on both surfaces, divided to the foot-stalk into several lobes, these again divided with linear segments. Stipules lanceolate, red, two on each side of the stem. Peduncles very long. Pedicels much divaricated. Calyx five-angled, very large and swelling; sometimes hairy, membranous at the edges, terminated by short awns reddish at the ends. Petals reddish blue, or pale purple, marked with three lines, emarginate, the little tooth between the lobes not very pointed. Anthers blue. Arils smooth, slightly keeled. Seed covered with minute punctures⁴.

Native of most parts of Europe, in corn fields and pastures, and under hedges. It flowers from June to August.

28. The leaves resemble those of *Potentilla argen-*

tea, some of them are five-cleft beyond the middle, and pinnatifid; others are digitate, with linear pinnatifid pinnae. The stipules are trifid. Native of the Cape of Good Hope⁵.

29. Stalks many, about a foot long, spreading, roundish, pale green, here and there reddish, beset with short white hairs pointing downwards, jointed; with alternate, spreading branches. Leaves opposite, on long foot-stalks, divided to the base into five segments, and these again divided usually into three (or three to six) smaller ones, which are usually entire, but the middle one is sometimes again subdivided; all of them are linear, but unequal, somewhat pointed, with hairs on both sides pointing upwards, red on the edges and at the tip, the sinuses obtuse: the segments of the root-leaves approach nearer to each other, and are blunter; foot-stalks spreading, a little flattened, hairy like the stalk. Stipules two-lobed, with a broad white base, the lobes semicordate, acuminate, red, shining, having a whitish line on the back, which together with the margin is edged with hairs. Flowers small, purplish red, on peduncles shorter than the leaves. Bractes two, red, minute. Calycine leaflets three-ribbed, awned, beset with glandulous hairs. Corolla a little shorter than the calyx; petals oblong-cordate, emarginate. Anthers nearly ovate, blue. Pistil woolly, with glandulous hairs. Stigma reddish. Aril villose, with the same glandular hairs.

G. dissectum can scarcely be mistaken for any other; it is, however, not only distinguished by its finely divided leaves, whence its trivial name, but by the flowers, which are usually of a bright colour, being on such very short foot-stalks as to appear sessile among the leaves; the petals also are usually shorter than the calyx by the awns of the latter, which are unusually long: the calyx and style are thickly covered with viscid hairs, and the hairs on the stalk do not spread horizontally, as in many other species, but obviously point downwards. It varies greatly in size; also with flesh-coloured and white flowers. Native of most parts of Europe, by road sides, on banks, in fallow fields, and on the borders of pastures, flowering in May and June till August⁶.]

30. This greatly resembles common Dove's-foot Cranes-bill, but is smaller, and the branches are shorter: the flowers are very small, of a pale blue colour. Seeds black, with short erect beaks. Native of Carolina.

31. Stems many, branched. Leaves five-lobed, crenate, on long foot-stalks, and mostly opposite. Flowers on long, slender, axillary peduncles. Corolla of a fine blue colour. Arils and beaks black. Native of Bohemia. [This, however, is doubtful. Cultivated in 1683, by Mr. James Sutherland. It flowers from June to August⁷.]

32. Stems spreading, branched, blood-red, hairy, particularly in young plants. Leaves opposite, hairy especially when growing in the shade, first three-lobed, the lobes again three-lobed, the lower ones distinct, the upper ones lengthened with confluent lobes, the jags terminated by a small red spine. Stipules four at each joint, two on each side. Peduncles very long. Pedicels short. Calycine leaflets ovate-lanceolate, nerved, hairy, ending in a long awn, the ten angles formed by the first and third outer leaves being each folded into three keel-like angles, the second and fifth each into one, and the fourth into two; the angles become more evident as the seeds ripen. Petals rose-coloured (varying to white) spreading and equal, the lamina somewhat heart-shaped, the claw long and linear, the middle part of it prominent, grooved, and spreading into three whitish nerves. Filaments not very evidently united at bottom; anthers red or purplish, with yellow pollen. Style villose: stigmas fine crimson, a little turned back. Seeds brown, smooth, ovate, flattened on one side, in a wrinkled aril.

¹ Curtis.

² Woodw. Mfs.

³ Ibid. & Engl. bot.

⁴ Wither. Woodw. Mfs. Engl. bot.

⁵ Linn. amoen.

⁶ Curtis.

⁷ Hort. kew.

The whole is beset with pellucid hairs, but becomes smoother as the plant grows older. It is commonly red at the joints, and the whole plant is frequently red. It has a disagreeable rank smell when bruised.

A decoction of Herb Robert has been known to give relief in calculous cases. It is considerably astringent, and is given to cattle when they make bloody water, or have the bloody flux. Mr. Curtis asks whether this practice may not originate from the old notion of signatures^a.

Native of all Europe, in woods, under hedges, in hollow trees, on walls and the roofs of houses, among rubbish, and in stony places, flowering from april through the whole summer.

The name *Stock-bill* is set down in Dr. Withering's arrangements, which is probably a corruption of *Stork-bill*.

β. In the variety which occurs near Swanning in Dorsetshire, and on the shore of Selfey island, the whole plant is shining; the leaves smaller, and more deeply divided.]

PROPAGATION AND CULTURE.

The annual sorts of *Geranium* may be increased by seeds, and if these be permitted to scatter, the plants will come up without any farther care. The perennial sorts, which are more numerous, may be increased the same way, or by parting the roots in autumn. They may be planted in almost any soil or situation, and require no other culture but to keep them clean from weeds. Many of them, indeed, are common weeds, but even some of these have beauty enough to recommend them to a place in a garden, particularly the second, eighteenth, twenty-first and twenty-second species.

Most of the *Erodiums* also are hardy, and may be increased in the same manner; the annual sorts by seeds, and the perennial by dividing the roots. Some of them, as the *crassifolium*, *incarnatum*, *glaucophyllum* and *chamædryoides*, require the protection of a green-house. The seeds of the *glaucophyllum* should be sown on a moderate hot-bed in spring, and when the weather is warm, the plants should be carefully transplanted on a sheltered border.

[*GERANIUM*. See *Erodium*, *Grielum*, *Monsonia*, & *Pelargonium*.

GERARDIA. (So named by Plumier in honour of John Gerarde, our old English botanist, author of the *Herbal*, 1597 folio, and a great cultivator of exotic plants, of which he published a catalogue in 1596.)

Lin. gen. n. 747. Reich. 805. Schreb. 1004.

Plum. 12. Juss. 119. *Nigrina*. *Mantifs*.

Melasma. Berg. cap. t. 3. Gertn. t. 55.

Class. 14. 2. *Didynamia Angiospermia*.

Nat. order of *Personatae*.—*Scrophularia*. Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-cleft, upright, sharp, permanent.

COR. one-petalled, ringent: tube round, longer than the calyx: upper lip upright, blunt, flat, broader, emarginate: lower lip reflex, three-parted: divisions lateral, emarginate; middle shorter, two-parted.

STAM. Filaments four, scarcely the length of the tube, two a little shorter. Anthers small.

PIST. Germ ovate, small. Style simple, short. Stigma blunt.

PER. Capsule ovate, two-celled, two-valved, gaping at the base; partition contrary.

SEEDS ovate, solitary.

ESSENTIAL CHARACTER.

Cal. five-cleft. Cor. two-lipped: lower lip three-parted, the lobes emarginate, the middle segment two-parted. Caps. two-celled, gaping.

SPECIES.

1. *Gerardia tuberosa*. *Tuberous Gerardia*.

Lin. spec. 848. Reich. 3. 120. Plum. ic. 75. f. 2.

Leaves subovate, tomentose, repand, the length of the stalk.

^a Curtis & Withering.

2. *Gerardia japonica*. *Japoneze Gerardia*.

Lin. syst. 553. Thunb. jap. 251.

Leaves ovate, gash-pinnatifid, petioled, stalk simple.

3. *Gerardia delphinifolia*. *Larkspur-leaved Gerardia*.

Lin. spec. 848. Reich. 3. 121. amœn. 4. 318.

Leaves linear, pinnatifid, stalk somewhat branched.

4. *Gerardia scabra*. *Rough Gerardia*.

Lin. syst. 553. suppl. 279.

Hispid, scabrous; leaves oblong, pinnatifid.

5. *Gerardia purpurea*. *Purple Gerardia*.

Lin. spec. 848. Reich. 3. 121. Gron. virg.

1. 72. 2. 193. Banist. virg. 1926. Pluk. mant.

t. 388. f. 1. (Digitalis)—Conf. Pluk. phyt.

1. 12. f. 2.

Leaves linear.

6. *Gerardia tubulosa*. *Long-tubed Gerardia*.

Lin. syst. 553. suppl. 279.

Smooth; leaves linear, entire, sharp; tube of the flower longer than the calyx.

7. *Gerardia flava*. *Yellow Gerardia*.

Lin. spec. 848. Reich. 3. 121. Gron. virg. 94.

(Anonymos) Pluk. mant. t. 368. amalth. t. 389.

f. 1. Banist. virg. 1926. (Digitalis).

Leaves lanceolate, pinnate-toothed, stalk extremely simple.

8. *Gerardia pedicularia*.

Lin. spec. 849. Reich. 122. Gron. virg. 68.

(Pedicularis). Pluk. mant. 64. Raii suppl.

397. (Digitalis).

Leaves oblong, doubly-ferrate, stalk panicled; calyxes crenate.

9. *Gerardia glutinosa*.

Lin. spec. 849. Reich. 122. Ofb. itin. t. 9.

Leaves ovate, ferrate, bractes linear, hispid.

10. *Gerardia Nigrina*.

Lin. syst. 553. suppl. 278.

Nigrina viscosa. Lin. syst. edit. 13. 167.

Melasma scabrum. Berg. cap. 162. t. 3. f. 4.

Scabrous, leaves lanceolate, ferrate at bottom, stalk four-cornered.

DESCRIPTIONS, &c.

Stalk upright. Leaves opposite. Flowers solitary, axillary, somewhat bell-shaped^a.

1. Root-leaves as on the spike. Bractes imbricate, one-flowered. Border of the corolla wheel-shaped. It may be doubted whether it be not of another genus^b.

Linneus recommends a farther examination of the fructification.—Native of South America.

2. Stalk villose. Leaves pinnate at the base, above gash-pinnatifid, villose; pinnae acute, ferrate. Flowers axillary, peduncled, solitary. Peduncle many times shorter than the leaves. Corolla purplish.—It differs from *G. pedicularia* in having a simple stalk, peduncle shorter than the leaf, and gash-pinnatifid leaves, with ferrate pinnae.—Native of Japan^c.

3. Stem a foot high, obtusely four-cornered, upright, even, with few alternate branches. Leaves opposite, smooth. Flowers axillary, from the middle to the top of the stem, opposite, directed one way, on very short peduncles. Calyx tubular, with five linear teeth the length of the calyx. Corollas oblong, with a gaping mouth, and a five-lobed rounded border, the two upper lobes shorter. Anthers twin, two having the spine of the base extended downwards, the other two having the spine parallel to the anther. Style the same length with the stamens. Stigmas blunt^d.—Annual. Native of the East-Indies.

4. Found at the Cape of Good Hope, by Thunberg.

5. Root annual. Stalks a foot high, filiform, either very simple, or brachiate, smooth. Leaves quite entire, opposite, but often alternate also. Flowers opposite, on one-flowered, filiform peduncles; or else sessile. Calyxes smooth, small, bell-shaped, five-toothed. Corollas very deep purple, either wheel-shaped or bell-shaped, or tubular; thus

^a Jussieu.

^b Ibid.

^c Thunberg.

^d Linn. amœn.

varying much in figure.—Native of North America.—It is the only species of this genus yet cultivated among us, and was introduced in 1772, by Samuel Martin, M. D. It flowers in July and August^f.

6. Found at the Cape of Good Hope, by Thunberg^g.

7. Stalk a foot high or more. Leaves subpetioled (like those of *Lycopus* or *Jacea*), gashed at the base like pinnate leaves with patulous sinuses. Spike terminating, lax, consisting of opposite large, yellow flowers. Anthers tending downwards into two thorns. There is no fifth-stamen. Native of North America^h.

8. Corollas pubescent on the outside, oblong, patulous. Teeth of the calyx crenate. It dries black, like a *Pedicularis*, and is allied to *P. triflis*. Native of North Americaⁱ.

9. Stem roundish, upright; with shorter branches. Leaves petioled, sharp, above an inch wide, deeply serrate, subvillose. Racemes terminating, solitary, composed of opposite flowers on very short peduncles. Calyxes five-parted, sharp, the uppermost division largest. A filiform bracte or two, of the same length with the calyx, is close to it, hispid like that, with glutinous hairs.—Native of China^k.

10. This was formerly made a distinct genus by Linneus, under the name of *Nigrina*; but he was afterwards of opinion that it could not be separated from the *Gerardias*.—Native of the Cape of Good Hope^l.

GERASCANTHUS. See *Cordia*.

GERBERA. See *Arnica*.]

GERMANDER. See *Teucrium*.

GEROPOGON. (From *Γερον*, an old man, and *Πογων*, a beard; from the whiteness of the seed-crown.)

Lin. gen. n. 904. Reich. 983. Schreb. 1228.

Juss. 170. Gært. t. 160.

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of *Compositæ Semiflosculosæ*, or Compound flowers, with semiflorets or ligulate florets only.—

Cichoraceæ, Juss.

GENERIC CHARACTER.

CAL. common simple, many-leaved: leaflets lanceolate-subulate, keeled, upright, longer than the corolla.

COR. compound subimbricate, uniform. Corollules hermaphrodite: outer as many as there are leaflets in the calyx; inner fewer, shorter.

Proper one-petalled, ligulate, truncate, five-toothed.

STAM. Filaments five, very short. Anther cylindric, tubular.

PIST. Germ oblong. Style filiform, the same length with the stamens. Stigmas two, bowed back, filiform.

PER. none. Calyx oblong, upright, gaping.

SEEDS of the Ray subulate, the same length with the calyx. Down with five patulous awns—of the Disk subulate, shorter. Down feathered.

REC. with bristle-shaped chaffs: (naked, G.)

OBS. There is a species with a calyced calyx.

ESSENTIAL CHARACTER.

Cal. simple. Recept. with bristle-shaped chaffs.

Seeds of the disk, with a feathered down—of the ray, with five awns.

SPECIES.

1. *Geropogon glabrum*. Smooth *Geropogon*, or old man's beard.

Lin. spec. 1109. Reich. 3. 611. hort. upf. 243.

(*Tragopogon*). Jacq. hort. 1. t. 33. Allion.

pedem. n. 845. Raii suppl. 149. Gært. fruct.

2. 374.

Leaves smooth.

2. *Geropogon hirsutum*. Rough *Geropogon*.

Lin. spec. 1109. Reich. 3. 611. Allion. pedem.

n. 846.

Tragopogon gramin. fol. hirsutis. Baub. pin. 275.

Leaves hairy.

^a Linn. spec.

^b Linn. spec.

^f Hort. kew.

ⁱ Ibid.

^l Linn. suppl.

^g Linn. suppl.

^k Ibid.

[3. *Geropogon calyculatus*. Perennial *Geropogon*.
Lin. syst. 709. Reich. 3. 611.

Tragopogon calyculatus: Jacq. hort. 2. t. 106.
Calyx calyced.

DESCRIPTIONS, &c.

These plants have the same habit with *Tragopogon* and *Scorzonera*. The flowers in the two first species not yellow; but red: these are annual. The third species is perennial. All of them are natives of Italy.]

1. This has an upright stalk more than a foot high, with long grass-like leaves. The stalk branches at top into two or three divisions, each terminated by one flesh-coloured flower. [The whole plant is smooth. Leaves narrow-ensiform, acuminate, sessile. Calyx usually seven-leaved. Seeds even, scarcely rough; the rays stiffly spreading, the middle ones erect^a.]

2. Stalk upright, a foot high. Leaves narrow. It seldom divides into branches, but is terminated by one flower.

[These were cultivated by Mr. Miller in 1759.

3. Root perennial. Stems several, branched. Flowers terminating, nodding before they open. Calyx calyced, with numerous floscules^b. Leaves sublinear, acuminate, the lowest stem-leaves and the root-leaves channelled beneath, and hairy on both sides, the upper ones flat, and a little hirsute only on the back. Stems ascending, round, a foot and half high, villose and leafy. Peduncles almost leafless, striated, pubescent, terminated by a single flower. Each calyx has about eight leaves, lanceolate, acuminate, with a membranaceous edge. Fruiting calyx angular. Corolla yellow on both sides. Receptacle naked. The seeds have a long, stiff, subplumose egret, yellow at the base, purple at top^c.
Introduced in 1774, by Joseph Nicholas de Jacquin, M. D. It flowers in June^d. The two others flower later, in July or August.

PROPAGATION AND CULTURE:

See *Tragopogon*.

GESNERA. See *Gesneria*.]

GESNERIA. (So named by Plumier in honour of Conrad Gesner of Zurich, the famous botanist and natural historian.)

Lin. gen. n. 749. Reich. 807. Gært. 177.

Juss. 165. Browne 262. Gesnera. Plum. 9.

Jacq. amer. 179. Gen. Schreb. n. 1006.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatæ*.—*Campanulaceæ*. Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, superior, five-cleft, sharp, permanent.

COR. one-petalled, incurved and recurved: tubethickish, with a contracted neck and funnel-form throat: border five-cleft, blunt; upper divisions concave, three lower flat, spreading.

STAM. Filaments four, shorter than the corolla. Anthers simple.

PIST. Germ inferior, flattened. Style filiform, the same in situation and length with the stamens. Stigma capitate.

PER. Capsule roundish, and crowned with the patulous calyx, subbilocular: partition in the middle longitudinally interrupted.

SEEDS extremely numerous, and very small. Receptacles on each side fastened to the partition.

OBS. If the capsule be cut transversely near the top, it appears to be one-celled; if through the middle, two-celled. Swartz.

ESSENTIAL CHARACTER.

Cal. five-cleft, sitting on the germ. Cor. incurved and recurved. Caps. inferior, two-celled.

SPECIES.

1. *Gesneria humilis*. Low *Gesneria*.

Lin. spec. 851. Reich. 3. 124. Plum. ic. 133.

f. 2.

Leaves lanceolate, serrate, sessile; peduncles branched, many-flowered.

^a Jacquin.

^b Linn. syst.

^c Jacquin.

^d Hort. kew.

- [2. *Gesneria acaulis*. *Stemless Gesneria*.
Lin. spec. 851. *Reich.* 3. 124. *amæn.* 5. 400.
Swartz. obs. 227. *Brown. jam.* 262. 2. *Sloan.*
jam. 1. 159. t. 102. f. 1. (*Rapunculo affinis*).
Leaves lanceolate-ovate, serrate, subpetioled, crowded
at the end; peduncles three-flowered, shorter than
the leaf.]
3. *Gesneria tomentosa*. *Woolly Gesneria*.
Lin. spec. 851. *syft.* 554. *hort. cliff.* 318. *Jacqu.*
amer. 179. t. 175. f. 64. *piet.* 89. t. 261. f. 47.
Gärtn. fruct. 2. 472. *Brown. jam.* 261.
Swartz. obs. 228. *Sloan. jam.* 1. 162. t. 104.
f. 2. *Raii suppl.* 396. 3. (*Digitalis*).
Leaves ovate-lanceolate, crenate, hirsute, peduncles
lateral, very long, corymbiferous.
4. *Gesneria Craniolaria*.
Swartz. prodr. 89. *Plum. gen.* 27. t. 137.
Craniolaria fruticosa. Lin. spec. 861. *Reich.* 3. 141.
Mill. dict. n. 2.
Leaves wedge-shaped, oblong, tooth-laciniate, pedun-
cles terminating, corollas bell-shaped.
- [5. *Gesneria grandis*.
Swartz. prodr. 89.
Leaves broad-lanceolate, very long, toothletted, rough-
haired above, rugged beneath, peduncles terminating;
stem arborescent.
6. *Gesneria scabra*.
Swartz. prodr. 89.
Leaves ovate-lanceolate, serrate, rugged, peduncles
axillary, corollas cylindric, recurved.
7. *Gesneria corymbosa*.
Swartz. prodr. 89.
Leaves ovate, acute, serrate, scariose, sharp, pedun-
cles many-parted, flowers in corymbs.
8. *Gesneria exserta*.
Swartz. prodr. 89.
Leaves ovate-lanceolate, crenate, smooth, peduncles
three-flowered, genitals twice the length of the
corolla, capsules ovate.
9. *Gesneria calycina*.
Swartz. prodr. 90.
Leaves lanceolate-ovate, acuminate, serrate, smooth,
peduncles three-flowered, genitals longer than the
corolla, calyxes bell-shaped, capsules cylindric.
10. *Gesneria ventricosa*.
Swartz. prodr. 90.
Leaves elliptic, acuminate, crenate, smooth, peduncles
four-flowered or thereabouts, segments of the calyx
oval-shaped, elongated, corollas ventricose.
11. *Gesneria pulchella*.
Swartz. prodr. 90.
Cyrilla pulchella. L'Herit. st. nov. 147. t. 71. *Ait.*
hort. kew. 2. 330.
Columna erecta. Lamarck. encycl. 2. 66. n. 2.
Achimenes 2. *Brown. jam.* 271. t. 30. f. 1.
Herbaceous, leaves ternate, ovate, acute, serrate, vil-
lose, peduncles axillary, one-flowered.
12. *Gesneria pumila*.
Swartz. prodr. 90.
Stemless, leaves ovate-wedge-shaped, crenate, subses-
file, peduncles subbisflorous, shorter than the leaves.

DESCRIPTIONS, &c.

These are either herbs or shrubs. The flowers are on axillary peduncles, many together, and accompanied with bractes^a. They are natives of South-America and the West-Indies.

1. Root diffused, creeping. Stem branched, naked at bottom. Leaves aggregate at top, deciduous. Peduncles branched, three-flowered.]

This is of much humbler growth than the third species; the leaves are much smaller; and the flowers are deeper cut at their brims. It was found growing naturally by the late Dr. Houstoun at Carthagen in New Spain. [Also by Sir Hans Sloane in Jamaica. Cultivated by Mr. Miller before 1733.

2. Stem round, woody, having a clay-coloured bark, with some furrows in it, rising three or four inches high, having at the top very many oblong leaves, standing very thick, without any order, on foot-stalks a quarter of an inch in length, covered

with a reddish wool like moss. They are seven inches long, and an inch and half broad near the farther end, whence they narrow to a point, and they also grow gradually narrower to the foot-stalk. From the axils come out small peduncles, branched, sustaining scarlet flowers an inch long, which are followed by a short, fungous, cornered seed-vessel, having no distinct cells, containing many small, oblong yellowish seeds^b.

Browne calls it *small tufted Gesneria, with scarlet flowers*; and observes that the stem is always simple, creeping along the rocks, and bearing a pretty large tuft of leaves at the extremity, with single flowers springing from each axil.

Swartz describes the stem as very short at first, but as it advances becoming frequently a foot in length, and in this state covered with withered leaves and calyxes. The leaves are rugged and wrinkled. The calyx is five-parted; the parts linear, and very long. The limb of the corolla is contracted and five-notched. The filaments are nearly equal; the anthers roundish and connected. The germ is ovate; the style longer than the corolla. The capsule is covered with the calyx, is five-cornered, grooved and two-celled.

Native of Jamaica.]

3. This rises with a shrubby stalk to the height of six or seven feet, dividing into two or three irregular branches, covered with a russet wool. Leaves seven or eight inches long, and two and a half broad in the middle, having a russet woolly midrib; they are placed on every side the branches without order, and on short foot-stalks: towards the ends of the branches, at every joint, from the axils, come out the peduncles; they are naked, and nine inches in length, branching at the top into many smaller peduncles, each sustaining a single flower of a dusky purple colour. Capsule roundish, sitting close in the calyx, the divisions of which rise above it.

[Swartz describes the stem as upright, a yard in height, suffrutescent, round, wrinkled and hirsute. Leaves scattered towards the end of the stalk, on very short petioles, spreading, acuminate, serrate, nerved and netted-veined, somewhat clammy, softish, tomentose-hirsute, hoary underneath. Stipule roundish, revolute, crenate, tomentose. Peduncles erect, round, hirsute, clammy, forming a sort of corymb at top, with unequal, subdivided pedicels. Corolla irregular, subcampanulate, gibbous at the base, and under the limb: the two upper segments approximate, so as to form one as it were that is bifid, arched in the middle, spotted on the inside with yellow and dark purple; the three lateral ones are spreading, ovate, acute, the lowest ventricose underneath; the tube is spotted within. The two anterior filaments are longer than the two others, and are bowed in towards the pistil. Anthers convex. Style longer than the corolla. Stigma cut half way transversely. Capsule crowned with the calyx, two-celled:—according to Gärtner, one-celled, opening at the top with an oval hole, of an ovate-globular shape, covered with the tomentose calyx fastened close to it, and serving as a bark, the teeth of it forming a sort of crown above it: there are two fungous opposite receptacles, fastened to the side of the capsule, separated near the axis, and dividing the capsule into two cells communicating with each other. This plant bears some affinity to the Saxifrages in the situation of these receptacles, and in the opening of the capsule.

This is called by Browne, *hairy erect Gesneria, with open flowers*. It is a native of Jamaica, and was cultivated by Mr. Miller in 1759^c.]

4. This sort grows naturally at the Havannah, and in some of the other islands in America. It rises with a shrubby stalk to the height of ten or twelve feet, dividing upwards into a few branches, which are garnished with spear-shaped leaves, cut on their edges; these are soft and hairy. The flowers are produced from the side of the branches, growing

^a Jussieu.

^b Sloane.

^c Hort. kew.

several together on the same foot-stalk; they are shaped like those of the Foxglove, of a greenish yellow colour, with brown spots on the inside; the flowers have a swelling tube, which is recurved, and the brim is slightly divided into five unequal segments. These appear in July, but are not succeeded by seeds in England.

[5 to 12. All these are natives of Jamaica, and the tenth of some other islands in the West-Indies; they were all observed by Swartz. They are shrubby, except the eleventh, which is annual, according to Swartz, but perennial, as marked by others.—Browne describes this as having a slender even stem, seldom rising above ten or fourteen inches in height; and throwing out a beautiful single reddish flower from the axil of each of the upper leaves. Filaments longer than the corolla, and somewhat twisted as they rise.

Monf. Lamarck saw it in flower in the garden belonging to Monf. L'Heritier, who named it *Cyrtilla pulchella*; which see. He first received it in flower by means of Broussonet from England; where it was introduced in 1778 by Mr. William Forsyth^d.]

PROPAGATION AND CULTURE.

These plants are propagated by seeds, which must be procured from the countries where they grow naturally. They should be brought over in their capsules, for as they are very small and light, when they are separated from the partition to which they adhere, they soon lose their vegetative quality.

The seeds should be sown in pots filled with light earth, and plunged into a hot-bed of tanner's bark as soon as they arrive, for they sometimes lie long in the ground; those which I have sown in autumn came up the following spring; therefore when they happen to arrive here at that season, the pots in which the seeds are sown should be plunged into the tan-bed in the stove, and during the winter the earth should be now and then gently watered to prevent its drying too much, but it must not be too moist. In the spring the pots should be removed out of the stove, and plunged into a fresh hot-bed, which will bring up the plants soon after. When these are fit to remove, they should be each planted into a separate pot, and plunged into a good hot-bed of tan, observing to shade them till they have taken new root; then they must be treated in the same way as other tender plants from the same countries.

In autumn they must be plunged into the tan-bed in the stove, where, during the winter, they should have but little water given to them; for if they receive much wet, it will destroy them. In this stove the plants must constantly remain, for they will not thrive if they are kept out of the tan. In the summer they should have free air admitted to them at all times when the weather is warm; and they must be frequently refreshed with water during that season, but it must not be given to them in too great plenty. As the plants advance in growth they will require larger pots, but there must be care taken not to over-pot them, for they will not thrive in large pots. With this management the plants will flower the second year, and may be continued three or four years, but they are not of long duration in their native country.

The fourth sort seldom flowers till the third year, and as it does not produce seeds here, it is with difficulty preserved in the European stoves.

[The eleventh sort deserves to be cultivated in the flower-gardens of America. It thrives best in a cool gravelly soil, well furnished with moisture, and intermixed with rich mould^e.

GESNERIA. See *Digitalis*.

GETHIOIDES. See *Allium pallens*.

GETHYLLIS. (*Γεθυλλίς* or *Γεθυών*, is the name of a plant in *Aristophanes*, *Athenæus*, &c. So named, as springing from the earth.)

^d Hort. kew.

^e Brown. jam.

Lin. gen. n. 590. Reich. 644. Schreb. 584.

Thunb. nov. gen. 13. Juss. 54. Papiria. Thunb.

æst. Lund. p. 1. f. 2.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Spathaceæ*.—*Narcissi*, Juss.

GENERIC CHARACTER.

CAL. none, unless a sheath obliquely truncate.

COR. one-petalled, superior: tube long, filiform, radical: border expanding flat, six-parted; divisions oblong.

STAM. Filaments six, inserted into the mouth of the tube, shorter than the border, usually divided. Anthers linear, spirally bent in.

PIST. Germ inferior. Style simple, longer than the stamens. Stigma capitate.

PER. Berry club-shaped, blunt, radical (sessile in the bulb itself, and proceeding from it) somewhat fleshy, one-celled.

SEEDS nestling, one upon another in three rows, glo-bular, smooth.

OBS. In some flowers, particularly in *G. ciliaris*, the filaments are divided above the base, with as many anthers; but two anthers are seldom seen on one filament; so that the same flower may have eight, ten, or more anthers.

ESSENTIAL CHARACTER.

Cal. none. Cor. six-parted. Berry club-shaped, radical, one-celled!

SPECIES.

1. *Gethyllis villosa*. Hairy *Gethyllis*.

Lin. syst. 339. suppl. 198. Thunb. nov. gen. 1. 14. n. 3.

Papiria villosa. Thunb. æst. lund. 1. 111.

Leaves linear-filiform, spiral, villose; segments of the corolla ovate-oblong.

2. *Gethyllis ciliaris*. Fringed *Gethyllis*.

Lin. syst. 339. suppl. 198. Thunb. nov. gen. 1. 14. n. 2.

Papiria ciliaris. Thunb. æst. lund. 1. 111.

Leaves linear, spiral, ciliate; segments of the corolla ovate-oblong.

3. *Gethyllis spiralis*. Spiral *Gethyllis*.

Lin. syst. 339. suppl. 198. Thunb. nov. gen. 1. 14. n. 1.

G. afra. Lin. spec. 633. syst. edit. 13. 367. Reich. 2. 412. hort. cliff. 493.

Papiria spiralis. Thunb. æst. lund. 1. 111.

Leaves linear, spiral, smooth: segments of the corolla oblong.

4. *Gethyllis lanceolata*. Lanceolate *Gethyllis*.

Lin. syst. 339. suppl. 198.

Papiria lanceolata. Thunb. æst. lund. 1. 112.

Leaves lanceolate, flat, segments of the corolla lanceolate.

DESCRIPTIONS, &c.

All these plants have the habit or air of *Colchicum*, but are sufficiently distinguished from it, by having a monopetalous corolla, and a berry for a fruit. There is but one flower on a naked stalk; and the fruit has a grateful odour, with a pleasant taste. They are natives of the Cape of Good Hope, where they were observed by Thunberg, who has figured and described them^f. The third species only has been long known in Europe. That was cultivated in 1780, by the late Dr. Fothergill. The two first were introduced here by Mr. Francis Mafson, in 1777 and 1778^g.]

GEUM (of Pliny. Derivation uncertain.)

Engl. *Avens* or *Herb-Bennet*.

Fr. *Benoite*.

Lin. gen. n. 636. Reich. 692. Schreb. 867.

Gærtn. t. 74. Juss. 338. Caryophyllata.

Tournef. 151. A. D. F. G.

Class. 12. 5. Icosandria Polygynia.

Nat. order of *Senticosæ*.—*Rosaceæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, ten-cleft, uprightish: segments alternately very small, sharp.

COR. Petals five, rounded: claws the length of the calyx, narrow, inserted into the calyx.

^f Linn. suppl.

^g Hort. kew.

STAM. Filaments numerous, subulate, length of the calyx, into which they are inserted. Anthers short, broadish, blunt.

PIST. Germs numerous, collected into a head. Styles inserted into the side of the germ, (terminating, G.) hairy, long. Stigmas simple.

PER. none. Common receptacle of the seeds oblong, (columnar, G.) hirsute, placed on the reflex calyx.

SEEDS numerous, compressed, hispid, awned, with a long style.

ESSENTIAL CHARACTER.

Cal. ten-cleft. Pet. five. Seeds with a kneed awn.

SPECIES.

1. *Geum virginianum*. American Avens.
Lin. spec. 716. syst. 479. Reich. 2. 551. hort. cliff. 195. Gron. virg. 56. Ait. hort. kew. 2. 217.
G. canadense. Jacqu. hort. 2. 82. t. 175.
Caryophyllata virg. albo fl. minore, rad. inodora. Herm. parad. t. 111.
C. virginianensis. Park. theat. 136?
Flowers upright; awns hooked, naked; stem-leaves ternate, the upper ones lanceolate, petals shorter than the calyx.
- [2. *Geum strictum*. Upright Avens.
Ait. hort. kew. 2. 217.
G. canadense. Lin. syst. 480. Murr. nov. comm. gott. 5. 33. t. 4. B.
G. aleppicum. Jacqu. ic. collect. 1. 88.
Flowers upright; awns hooked, naked; stem-leaves pinnate, leaflets and stipules gash-cleft; petals longer than the calyx.]
3. *Geum urbanum*. Common Avens, or Herb-Bennet.
Lin. spec. 716. Reich. 2. 551. hort. cliff. 195. fl. suec. n. 460. mat. med. 132. Gärtn. fruct. 351. Hudf. angl. 226. With. 537. Curtis lond. 2. 36. Lightf. scot. 273. Relb. cant. n. 378. Hall. belv. n. 1130. Pollich pal. n. 501. Neck. gallob. 226. Leers herb. n. 397. Fl. dan. t. 672. Krock. files. n. 807. Murr. nov. comm. gott. 5. 33. t. 4. A. Blackw. 253. Gärtn. fruct. 351.
Caryophyllata urbana. Scop. carn. n. 628. Allion. pedem. n. 1494.
C. vulgaris. Baub. pin. 321. Clus. hist. 2. 102. Mor. hist. 2. f. 4. t. 26. f. 1, 2.
C. Dod. pempt. 137. Fuchf. 384. Ger. 842. 1. emac. 994. 1. Park. theat. 136. f. 1. Raii hist. 606. syn. 253. Petiv. brit. t. 40. f. 1.
Caryophyllata Brunf. & Herba benedicta ej. 4.
β. *C. vulgaris* majore flore. Baub. pin. 321. Fuchf. 385. Trag. 37. Hudf. & With. β. &c. Raii hist. 606. 2. syn. 253. Petiv. brit. t. 40. f. 2.
Flowers upright; awns hooked; naked; stem-leaves ternate, root-leaves lyrate-pinnate.
- [4. *Geum japonicum*. Japan Avens.
Lin. syst. 480. Thunb. jap. 220.
Flowers upright; fruits hirsute; awns naked, leaves with three lobes or more.]
5. *Geum rivale*. Water Avens.
Lin. spec. 717. Reich. 2. 552. hort. cliff. 195. fl. suec. n. 461. mat. med. 132. fl. lapp. 216. Hudf. angl. 226. With. 538. Sowerby engl. bot. t. 106. Lightf. 274. Relb. n. 379. Hall. belv. n. 1129. Fl. dan. t. 722. Leers herb. n. 398. Krock. files. n. 808.
Caryophyllata rivalis. Scop. carn. n. 629.
C. aquatica, nutante flore. Baub. pin. 321. Mor. f. 4. t. 26. f. 7.
C. septentrionalium. Lob. ic. 1. 694.
C. montana 1. Clus. hist. 2. 103.—purpurea. Ger. emac. 995. 4. Raii hist. 607. syn. 253.—mont. f. palustris purpurea. Park. theat. 137. f. 5. Petiv. brit. t. 40. f. 3.
C. aquat. fl. rubro striato. Baub. hist. 2. 398. 2.
β. *C. aquat.* altera. Baub. pin. 322. Mor. t. 26. f. 8.
γ. *C. mont.* fl. pleno prolifero Breynii. Raii hist. 607.—prolif. flosculis elegantissimis. Loef. pruss. 35. t. 6. Lin. suec. β. Ger. emac. 995. f. ult. Pet. t. 40. f. 4.
Flowers nodding, awns hooked, villose, petals retuse, roundish-wedge-shaped, leaves pinnate.

[6. *Geum hybridum*. Mule Avens.

Lin. syst. 480. Jacqu. misc. 2. 33. icon. rar. t. 6.

Caryophyllata montana tertia. Clus. rar. 104.

Flower nodding, calyx leafy, longer than the polypetalous corolla.]

7. *Geum montanum*. Mountain Avens.

Lin. spec. 717. syst. 480. Reich. 2. 552. Jacqu. austr. 4. 38. t. 373. Hall. belv. n. 1131. Krock. files. n. 809. 2. t. 13. D'Assa aragon. n. 452.

Caryophyllata montana. Scop. carn. n. 630.

C. alpina. Pon. bald. 342.—lutea. Baub. pin. 322. Mor. t. 26. f. 3.

C. montana. Cam. epit. 727. Clus. hist. 2. 103. 2. Ger. 842. f. 2. emac. 994. 2. Park. theat. 136. f. 2. Raii hist. 608.—fl. magno luteo, Baub. hist. 2. 398. f. 1.

β. *G. alpinum*. Mill. diet. n. 5.—*C. alpina* minor. Baub. pin. 322. prodr. 139. Park. theat. 137. f. 3. Raii hist. 608.—minima. Ger. emac. 995. f. 5.—fl. aureo. Barrel. ic. t. 399.

Stem one-flowered, awns straight, villose, leaves pinnate, hairy, outmost leaflet very large and roundish, the lower ones gradually smaller.

[8. *Geum potentilloides*. Siberian Avens.

Ait. hort. kew. 2. 219.

G. Laxmanni. Gärtn. fruct. 352.

Dryas geoides. Pallas itin. 3. 732. t. Y. f. 1. Jacqu. hort. 3. 38. t. 68. Falck russ. t. 11.

Caryophyllata potentilloides. De Lamarck encycl. 1. 400.

Stem one or two-flowered, awns straight, naked, calyxes of the fruit upright, leaves pinnate, toothed.

9. *Geum reptans*. Creeping Avens.

Lin. spec. 717. syst. 480. Reich. 2. 553. Hall. belv. n. 1132. Jacqu. austr. 5. 38. t. app. 22. Krock. files. n. 810.

Caryophyllata alpina apii folio. Baub. pin. 322. Mor. hist. 2. 431. f. 4. t. 26. f. 5.—minor altera. Park. theat. 136. n. 4. Raii hist. 608.—tenuifolia incana, &c. Barrel. ic. t. 400. Bocc. mus. t. 128.

Stems one-flowered, awns straight, villose, leaves pinnate, gashed, hairy, runners creeping.

DESCRIPTIONS, &c.

These are perennial herbaceous plants. The leaves usually unequally pinnate, with the terminating leaflet larger than the rest. The stipules fastened to the petiole. The peduncles terminating or axillary, supporting few flowers, sometimes only one. Natives of Europe and North America. Flowering from May to September.]

1. Stem a foot and half or two feet high, branching at top into small peduncles, each terminated by a small white flower.

[This species differs from *G. urbanum*, which it otherwise much resembles, in having white petals shorter than the calyx; the flowers nodding during flowering time; the peduncles being thicker towards the flower; the seeds hairy, and the root-leaves sub-bipinnate.]

Parkinson mentions an Avens from New-England brought by John Newton a Chirurgion of Colliton, but he says it differs from *G. rivale* only in being taller and greater.

Cultivated in 1739, by Mr. Miller. It flowers in July and August: and is a native of North America.

2. This has the habit of *G. urbanum*. Stems upright, round, a foot and half high and more, most of the branchlets ending in one-flowered peduncles. Root-leaves pinnate and petioled, with the outmost leaflet very large, rounded and lobed, the side ones ovate, differing much in size, all sessile and unequally serrate: sometimes the extreme leaflet is trifid-palmate; sometimes, but more rarely, all the leaflets are deeply gashed. Stem-leaflets lanceolate and acute. Uppermost stem-leaves simple, and below these ternate. Stipules sessile, gashed. Petals

* Lin. spec.

† Hort. kew.

yellow

yellow, scarcely longer than the calyx. Fruit twice as large as in *G. urbanum*^c.

Native of North America. Introduced in 1778, by Monf. Thouin. It flowers in may and june^d.

3. Stalks from one to two feet high, nearly upright, somewhat flexuose, slightly angular, hairy, branched at top. Root-leaves varying, but most commonly pinnate, petioled with a ciliate sheath, the end-leaflet large, divided sometimes into three lobes, at others more deeply into three parts, the lateral leaflets few, small, unequal; all deeply serrate, veined, and hairy: stem either divided almost to the base, or really ternate; accompanied with a large pair of roundish, toothed stipules, resembling the leaflets. Peduncles single, nearly upright, round, somewhat hairy, supporting one flower. Corolla small, yellow, with very short claws. Filaments yellowish, at first bent in, afterwards upright, half as long as the larger segments of the calyx: (not longer than the smaller segments. *Scop.*) Anthers roundish, yellow, turning brown: (having hairs about the edge, visible only in a glass. *Scop.*) Gerns hairy. Styles smooth, purple, fixed to the top of the germ, jointed in the middle, a little thickened at top^e. Seeds about 110, ovate, of a pale ferruginous colour, covered with two skins; the outer leathery, terminated by the awn; the inner membranaceous, very thin, pale straw-colour: embryo elliptic, slightly flattened, white; cotyledons oblong, thin; radicle short, at bottom^f.

Common in most parts of Europe, in woods and hedges; flowering from may to september.

The roots have a mildly astringent aromatic taste, somewhat like that of Cloves, whence this plant has the name of *Caryophyllata*. They should be gathered in dry warm situations, for in shady, moist places they have little virtue. Gathered in the spring, and put fresh into ale, they give it a pleasant flavour, and prevent its turning sour. Infused in wine, it is esteemed a good stomachic; but in water Haller affirms it to have been attended with bad effects, when given in malignant fevers, producing delirium. Chewed in the mouth, the roots take off from a disagreeable breath^g.

β. Observed by Dr. Lister in Tedford wood on the Lincolnshire wolds. Cultivated by Ray in his garden at Cambridge, from the neighbouring woods.

4. Stalk round, flexuose, upright, hirsute, a foot high or more, sometimes, but seldom, a little branched at top. Branches alternate, very short, somewhat tomentose. Leaves alternate, petioled, roundish, toothed, villose, soft, an inch in length. Petiole tomentose, a little shorter than the leaf. Stipules in pairs, leafy, ovate, gash-toothed, shorter than the petiole. Flowers terminating the stem and branches, solitary. Petals the length of the calyx. Seeds ovate, rough, with gray hairs. Awns subulate, hooked, reflex, smooth. Native of Japon^h.

5. Root creeping, reddish, astringent, aromatic, smelling like cloves. Stem a foot high, upright, round and branched, bending at top, but becoming erect as the fruit ripens. Leaves lyrate, much larger than in *G. urbanum*, jagged, gash-serrate and hirsute. Stipules undivided, or jagged. Peduncles purplish, hirsute, with hairs terminating in a red globule, becoming less bent as the seeds ripen. Calyx cylindric, hirsute, with the same sort of hairs as are on the peduncle, of a dull red colour. Petals upright, never expanding, the length of the calyx, purplish red and veined. Stamens near 100, or even more; filaments smooth, anthers yellow. Receptacle of the seeds oblong and peduncled; whereas that of *G. urbanum* is ovate and sessile: the tip also of the awns is hairy, not naked as in the otherⁱ.

Native of most countries of Europe, in moist pastures and woods, indicating (according to Linneus) a barren soil, not fit for corn. Also in the

Levant, and North America.—With us it is more common in the north, as on the water of Leith, near Edinburgh, and other places in Scotland on moorish grounds; Settle, Ingleton, &c. in Yorkshire, and Lancashire, and by sides of rivers and on mountains in many places of the northern counties. About Chevely and Wood-Ditton in Cambridgeshire, where it was first found by Dr. Chevallier, the late master of St. John's College. In Wolverton wood near Lynn; at Marham near Swaffham, and near Norwich, in Norfolk. Near Sudbury, in a bog. Near Aston in Warwickshire. Also in Wales, by Mr. Thomas Glynn before 1633^k. About Snowdon, &c.

It flowers from the end of may to autumn.

The powdered root is beneficial in diarrhoeas and hæmorrhages, and is much used by the Canadians in the cure of tertian agues. It will cure malt-liquor of its ropyness.

This species varies with yellow flowers, and they frequently become double and proliferous.—Near Strickland in Westmoreland, observed by Mr. Lawson; also at Brearcliff^l.

6. This seems to be a mule plant produced between the subsequent and foregoing species^m.

It grows much taller than *G. rivale*, and is in every respect a larger plant. The lower leaves are interruptedly pinnate, with three pairs of leaflets, besides the smaller ones, and that at the end, which is very large. Calyx duskier purple, tinged with green. Corolla yellow, only tinged with purple at the edge, about the same length with the calyx, having sometimes more petals than five.

7. Root-leaves in a tuft, on petioles of different lengths; these are hairy, and have several pairs of leaflets on them, (five or more. *Haller.*) the lowest very small, the succeeding ones gradually larger, and the pair immediately under the great terminating leaflet much bigger than any of the rest: the extreme leaflet is two or three inches in length and breadth, obscurely lobed, gash-serrate, and veined. The leaves of the stem sessile, solitary, alternate, trifid, the pinnae smaller and more crowded than in the others, sessile and gash-serrate. Stem unbranched, from a span to a foot and half in height. Flowers large, solitary, spreading, upright. Calyx wide, hairy, green. Petals yellow, almost saffron-coloured, emarginate, (sometimes seven in number. *Haller.*) Anthers golden. Receptacle hairyⁿ.

In the mountains of Switzerland, Austria, Silesia, Dauphiné, Arragon: Ray found it near the Great Chartreuse in Dauphiné; and I gathered it on the Col. de Balme, in going from Chamouni to the Valais in 1779.—It flowers in june and july—with us in our gardens from may to september. Cultivated in 1597. Gerarde says it flourishes and increases infinitely in our London gardens.

β. Small Mountain Awns is made a distinct species by Mr. Miller, who says that it is a very low plant, with flower-stalks about three inches long, bending on one side, each terminated by one bright yellow flower, about the same size with those of the common sort.

[Found on monte Baldo, &c.

8. On account of the calyx when ripe being bell-shaped; the corolla yellow and five-petalled; the receptacle elongated, the awns naked and jointed, this approaches nearer to a *Geum* than a *Dryas*. The leaves are pubescent on both sides, blue underneath, and the whole appearance is that of a *Geum*.—The ripe calyx is closed by the five larger segments converging, and the bristle-shaped, rigid, permanent filaments. Receptacle cylindric, slender, excavated, naked, a little shorter than the calyx. Seeds numerous, obovate, gibbous on one side, thence compressed into a straight keel, shagreened on all sides with raised dots, of a brown-ferruginous colour. Awn straight, like a needle, twice as long as the seed, and inserted into the top of it, smooth, and falling of itself when ripe^o.

^k Ger. emac.

^l Merret.

^m Murr. in syst.

ⁿ Gartner.

^o Krock.

^c Jacquin.

^d Hort. kew.

^e Curt. & With.

^f Gartner.

^g Curtis, Wither. Haller, Linn. fucc. Krock.

^h Thunberg.

ⁱ Withering, Scopoli, Leers, Krock.

Native of Siberia. It flowers in June.

Introduced in 1780, by Simon Pallas, M.D.^p

9. Root large and woody. Stems some almost upright, flowering, hirsute, others procumbent, creeping; all round, having palmate, sessile, alternate leaves, otherwise naked; the flowering stems are but little longer than the leaves, and bear usually one flower, seldom two, and very seldom three. Most of the root-leaves are on petioles, rough with hairs; they are composed of two or three pairs of leaflets (four or five. *Haller*), with very small ones interposed, the last pair larger than the others, the extreme leaflet very large, three or five-lobed: they are gash-ferrate or toothed, hirsute, green, somewhat like the leaves of Parsley, smaller than in the other sorts, and deeper cut. Flower much larger than in the *montanum*: calyx green, with the segments often reddish; they are larger than in the *montanum*, and lanceolate: petals yellow, emarginate, marked with lines, much larger than the calyx; the whole corolla sometimes two inches in diameter. Styles filky. Receptacle villose^q.

Native of Switzerland, Austria, Silesia, Savoy and Piedmont: flowering in June and July.—Introduced in 1775, by Doctors Pitcairn and Fothergill^r.]

PROPAGATION AND CULTURE.

The third sort being common in a wild state, is admitted only into botanic gardens. They are all hardy plants, which require a shady situation, but will thrive in any soil. They may easily be propagated by seeds, which should be sown in autumn; for when they are sown in the spring, they do not grow the same year.

[*GEUM*. See *Dryas* and *Saxifraga*.

GHINIA. (So named by Schreber, in honour of Lucas Ghini, a famous physician and botanist of Bologna, in the sixteenth century.)

Lin. gen. Schreb. n. 42. & add. 817.

Tamonea. Aubl. guian. 268. Juss. 109. Swartz. prodr. 94.

Class. 2. 1. Diandria Monogynia.—Didynamia. Sw. Nat. order of Personata.—Vitices, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, tubular, permanent: mouth expanded, five-toothed; acuminate.

COR. one-petalled, irregular: tube long; narrow; border two-lipped; upper lip largest, roundish, concave, ascending; lower three-parted, segments roundish, the middle one largest, bent down, emarginate.

STAM. Filaments four, inserted into the tube above the base, two longer than the others. Anthers with oblong cells; one at the end, fertile in the longer filaments, barren in the shorter; the other inserted towards the middle of the filament, in shape of a scale.

PIST. Germ roundish. Style the length of the tube. Stigma four-lobed.

PER. Drupe turbinate, angular, longer than the calyx, which is permanent.

SEED. Nut angular, four or five-celled, with one seed in each cell. (four-cornered, four-spined at the end, four-celled; with solitary kernels. *Sw.*)

OBS. Allied to *Verbena*.

ESSENTIAL CHARACTER.

Cal. five-toothed, teeth acuminate. *Cor.* two-lipped. *Stam.* four, with two barren anthers at the end of the shorter filaments. *Per.* a Drupe, containing a four or five-celled nut, with a seed in each cell. (A fleshy four-celled nut. *Sw.*)

SPECIES.

1. *Ghinia spinosa.*

Tamonea spinosa. Swartz. prodr. 94.]

Verbena curassavica. Lin. spec. 28. Reich. 1. 53.

Mill. dict. n. 17.

[*Kämpfer. Houst. rel. 3. t. 2.*

Fruits four-spined.

2. *Ghinia mutica.*

Tamonea mutica. Swartz. prodr. 94.

T. spicata. Aubl. guian. 660. t. 268.

Fruits without spines.]

^p Hort. kew.

^q Krock, Haller.

^r Hort. kew.

DESCRIPTIONS, &c.

1. Stem slender, woody, branching, near three feet high. Leaves oval, sharply indented, light green, on short foot-stalks. Flowers distant, sessile, in a loose spike, on slender, naked, axillary peduncles, six or seven inches in length. Corollas small, bright blue. Seeds two, terminated by short awns, and inclosed in the calyx.

[It is an annual plant, and native of the West-Indies, Antigua, Curacao, &c.^r] The seeds were sent to Mr. Miller from La Vera Cruz, by Dr. Houstoun.

[2. This also is an annual plant, about a foot and half in height. Stem strong, straight, a little woody. Leaves rounded or subovate, deeply toothed, having short hairs on both surfaces. Petiole three or four lines in length. Spikes axillary, opposite. Flowers solitary, few, alternate, pedicelled, with a small, linear bracte at the base of each pedicel. Corolla blue. Fruit black, inclosed within the calyx; nut close and woody, four-celled or five-celled, each cell having a small kernel in it. Native of Guiana, and the island of Cayenne^s.

GIGALOBium. See *Mimosa*.

GILBERTIA of Gmelin, the same with *Quivisia* of Cavanilles and Jussieu.

GILLIFLOWER. See *Dianthus*.

————— Stock. See *Cheiranthus*.

————— Queen's, or Dame's Violet. See *Hesperis*.

GINANNIA. (So named by Scopoli in honour of Ginseppe Ginanni of Ravenna, scholar of Vallisneri. Opera posthuma, Ven. 1755, fol. curante Georgio Fossato. Francesco Ginanni is his nephew.)

Lin. gen. Schreb. n. 691. Scop.

Palouë. Aubl. 141. Palovea. Juss. 351.

Class. 9. 1. Enneandria Monogynia.

Nat. order of Lomentaceæ.—Leguminosæ, Juss.

GENERIC CHARACTER.

CAL. Perianth double: outer one-leafed, bifid, acute; inner one-leafed, cup-shaped, four or five-cleft; segments oval, concave, obtuse, spreading, one larger than the rest.

COR. Petals three, oblong, obtuse, fringed, spreading, inserted into the larger segment of the calyx at the base.

STAM. Filaments nine, filiform, flexuose, longer than the corolla, inserted into the mouth of the calyx. Anthers parallelipid, versatile.

PIST. Germ oblong, compressed, at the bottom of the calyx affixed to a pedicel, with a membranaceous wing at top. Style filiform, flexuose, the length of the filaments. Stigma obtuse.

PER. Legume long, straight, one-celled, two-valved, pedicelled.

SEEDS very many, oval, flattened, smooth.

ESSENTIAL CHARACTER.

Cal. double, both one-leafed. *Pet.* three, fringed, spreading. *Germ* pedicelled, with a membranaceous wing at top. *Legume.*

SPECIES.

Ginannia guianensis.

Palouë guianensis. Aubl. guian. 365. t. 141.

DESCRIPTION, &c.

This is a shrub growing to the height of fifteen feet, beginning to be branched at one or two feet from the ground. Leaves alternate, entire, smooth, ovate-oblong, acuminate, subsessile; the largest six inches long, and two inches and a half wide. Stipules minute, in pairs, at the base of the petioles. Flowers terminating, three or four together, on a short peduncle, on which are four or five soft green scales, or bractes.

Native of the forests of Guiana, flowering in February, and fruiting in May^u.

Jussieu doubts whether the corolla may not have five petals, two of which drop off quickly; and also, whether there may not be a tenth filament, which is barren?

After all, may not this shrub be a species of *Brownea*?

^p Swartz.

^r Aublet.

^s Ibid.

GINGER.

GINGER. See *Amomum*.

GINGIDIUM. See *Artedia*, *Daucus*, *Tordylium*.

GINKGO (vel Gin an, vulgo Ittio Kämpf.)

Kämpf. amoen. 813. Thunb. jap. 358. Lamarck. encycl.

SPECIES.

Ginkgo biloba. Maidenhair Tree.

Lin. syst. 987. Reich. 4. mant. 313. Thunb. jap. 358. Ait. hort. kew. 3. 479. Kämpf. amoen. 811.

Gingo du Japon. Lamarck. encycl. 712.

DESCRIPTION, &c.

This tree grows to a prodigious size, with a trunk frequently as thick as the largest oak; the branches are alternate and spreading. Leaves alternate, petioled, wedge-shaped, rounded on the upper edge, where they are slightly gashed or notched unequally, with a large sinus in the middle, dividing them into two lobes: they come out in bundles at the knots or tubercles of the branches, are smooth, and finely striated by numerous parallel forked veins, but they have neither rib nor nerve, and are not much unlike the leaves of Maidenhair; they are from an inch and half to three inches in width; and the petioles are about two inches long, slightly channelled, pubescent at the base above, with the edges of the leaf running down the top^a.

Of the fructification we yet know very little with certainty. The flowers are male and female separate, probably on different trees. The male flowers were produced last year (1795) in the royal botanic garden at Kew, but in a state not sufficiently perfect to determine the character absolutely. They come out in april, before the leaves, and from the same bud with them, towards the end of the branches; on aments or catkins, as Kämpfer describes them, pendant and longish, abounding in pollen.—The female flowers are probably solitary or few in number in the axils of the leaves, Kämpfer having assigned this situation to the fruits, which he says grow on a thick fleshy peduncle an inch in length, and having figured them single: he describes them as round or oblong, of the appearance and size of a Damascene Plum or Damson, with a warted surface becoming yellow as the fruit ripens, and a fleshy, juicy, white pulp, adhering very closely to the nut, which resembles that of the Pistachia, but is almost double the size, and more of the form of an Apricot stone; the shell is woody, thin, brittle and whitish, and the kernel is white, rather firm, sweet, with a mixture of austerity, or bitterness, when raw, but is agreeable when roasted gently on the coals, before the skin is taken off. In this state it is supposed to help digestion.

Native of Japan and China. Cultivated in 1758 by Mr. James Gordon^b, who first sent the tree to Linneus^c.

GINORA. (So named by Jacquin in honour of the Marquis Carlo Ginori, who had a botanic garden near Florence, kept up by his son Lorenzo.)

Lin. gen. n. 605. Reich. 661.

Ginoria. Jacqu. amer. 91. Schreb. n. 826. Juss. 331.

Class. II. 1. Dodecandria Monogynia.

Nat. order of *Salicariæ*. Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved: tube bell-shaped: border fix-cleft; segments lanceolate, spreading, coloured, permanent.

COR. Petals six, roundish, spreading, longer than the calyx, with long claws inserted into the neck of the calyx.

STAM. Filaments twelve, subulate, patulous, as long as the calyx, and inserted into it. Anthers kidney-shaped.

PIST. Germ roundish, flattened. Style subulate, the same length with the corolla, permanent. Stigma obtuse.

^a Thunb. Lamarck, Kämpf.

^b Hort. kew.

^c Linn. mant.

PER. Capsule flattened and roundish, shining, coloured, somewhat four-grooved, four-valved, one-celled, gaping at the tip.

SEEDS very many, minute. Receptacle roundish, large.

ESSENTIAL CHARACTER.

Cal. fix-cleft. Pet. fix. Caps. one-celled, four-valved, coloured, containing many seeds.

SPECIES.

1. Ginora americana.

Lin. spec. 642. syst. 447. Reich. 2. 429. Jacqu. amer. 148. t. 91. piç. 73. t. 137.

DESCRIPTION, &c.

An elegant shrub, with the appearance of Myrtle. Leaves opposite. Peduncles axillary and terminating, bearing one flower^d.

It grows upright, to the height of three or four feet, and divides into smooth branches, round, except that they are compressed at the origin of the twigs and leaves, all woody. Leaves lanceolate, acute, quite entire, smooth, spreading, an inch and half long, on very short petioles. Peduncles slender, spreading, solitary, an inch in length. Flowers handsome, almost an inch in diameter, without any scent. Calyx red; corolla blue; capsule dark-red, outwardly resembling a berry^e.

Native of Cuba, by river sides, and called there Rosa del rio, or river Rose.

GINSENG. See *Panax*.

GISEKIA. (So named by Linneus in honour of Paulus Dietericus Giseke, Professor of Physics at Hamburg.)

Lin. gen. Reich. n. 422. Schreb. 532. Juss. 315.

Koelreutera. Murr. comm. nov. goett. 3. t. 2. f. 1.

Class. 5. 5. Pentandria Pentagynia.

Nat. order of *Succulentæ*.—*Portulacææ*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets ovate, concave, blunt, scarious at the edge, permanent.

COR. none.

STAM. Filaments five, subulate, ovate at the base, short. Anthers roundish.

PIST. Germ superior, roundish, retuse, five-parted. Styles short, bowed back. Stigmas blunt.

PER. Capsules five, roundish, somewhat flattened, scabrous, blunt, approximating.

SEEDS solitary, ovate, smooth.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. none. Caps. five, approximating, roundish, one-seeded.

SPECIES.

1. Gisekia pharnacioides. Trailing Gisekia.

Lin. syst. 304. Reich. 1. 768. mant. 562. Koelreutera molluginoides. Comm. gott. nov. 3. 67. t. 1. f. 1.

DESCRIPTION, &c.

Stalks herbaceous, decumbent, smooth, round, scored with a line on the upper side, a foot long, with remote joints. Branches of the base alternate. The herb resembles that of *Illecebrum ficoideum*. Leaves opposite, petioled, elliptic-lanceolate, quite entire, blunt, smooth and even, spreading. Peduncles axillary, solitary, round, naked. Umbel simple, many-flowered. Flowers green on the outside, white within, hanging down, except on the day of flowering^f.—The lower branches are trichotomous, the rest flexuofely and alternately dichotomous. The leaves in the trichotomies opposite, the rest alternate; all flat and granulated. Most of the flowers axillary, on one-flowered peduncles: the segments of the calyx with scattered hairs on the inside. Capsules or seeds black^g.

It is an annual plant, native of the East-Indies; flowering here in June.—Introduced in 1783; by John Earl of Bute^h.

GITHAGO. See *Agrostemma*.

GLABRARIA. (So named from the smoothness of the wood, which shines like silk.)

Lin. gen. Reich. n. 975. Schreb. 1219. Juss. 433.

Class. 18. 4. Polyadelphia Polyandria.

^d Linn. spec. & Juss. gen.

^e Linn. mant.

^f Jussieu.

^g Jacquin.

^h Hort. kew.

GENERIC CHARACTER.

- CAL.** *Perianth* one-leafed, tubular, five-cleft, shorter by half than the corolla.
- COR.** *Petals* five, lanceolate, blunt, equal. *Nectary* surrounding the germ, with subulate, upright, coloured bristles, the length of the calyx.
- STAM.** *Filaments* thirty, capillary, interposed between the nectaries, in sixes connected at the base, the same length with the calyx. *Anthers* kidney-shaped.
- PIST.** *Germ* subglobose (tetracoccus?) *Style* filiform, the length of the stamens. *Stigma* simple.
- PER.** *Drupe* juiceless, one-celled.
- SEED,** a bony, oval nucleus.

ESSENTIAL CHARACTER.

- Cal.* five-cleft. *Pet.* five. *Nect.* composed of bristles the length of the calyx. *Stam.* thirty, always in sixes. *Per.* a Drupe.

SPECIES.

1. *Glabraria terfa*.

Lin. syst. 697. *Reich.* 3. 586. *mant.* 276. *Lour. cochinch.* 471. *Rumph. amb.* 3. 71. t. 44. (Lignum leve.)

DESCRIPTION, &c.

A large tree resembling *Laurus Camphora*, or the Camphor-tree. Leaves alternate, petioled, ovate-lanceolate, quite entire, smooth, acuminate, submentose underneath, even nevertheless, and glaucous. Flowers white, in little axillary balls, forming a sort of raceme, leafless, and much shorter than the leaves. Calyxes the colour of *Elæagnus*.—Native of the East-Indies^a.

The wood is very light and pale-coloured; being not liable to rot, or to be attacked by insects, it is much used in building both houses and ships.

Gladiolo accedens. See *Xyris*.

Gladiolo similis. See *Antholyza*.]

GLADIOLUS (of *Pliny*. *Dimin.* from *Gladius*, a sword; and so named from the form of the leaves.)

Engl. Corn-flag. *Fr.* Glayeul.

Lin. gen. n. 57. *Reich.* 63. *Schreb.* 77. *Tourn.* 190. *Thunb. diff.* 5. *Gartn.* t. 11. *Juss.* 58.

Class. 3. 1. Triandria Monogynia.

Nat. order of *Ensatæ*.—*Irides*, *Juss.*—*Liliaceæ*.

Hall. Boerh. *Adans.* *Bulbosæ*, *Raii*.

GENERIC CHARACTER.

CAL. A *Spathe*, two-valved; inferior, shorter than the corolla: valves oblong, permanent; the outer one larger, inclosing the inner.

COR. one-petalled, superior: tube cylindric, bent: border somewhat bell-shaped, fix-parted; segments oblong, from erect-patulous, the uppermost and lowest lateral either without or within.

STAM. *Filaments* three, inserted into the orifice of the tube, filiform, shorter than the corolla. *Anthers* ovate, incumbent.

PIST. *Germ* inferior, triangular. *Style* filiform. *Stigmas* three, rolled back and spreading, blunt, villose.

PER. *Capsule* ovate, three-cornered, blunt, three-celled, three-valved.

SEEDS very many, smooth.

OBS. *Antholyza* may very well be placed in this genus.—*Gartn.*

ESSENTIAL CHARACTER.

Cor. fix-parted, irregular, unequal. *Stigmas* three.

SPECIES.

1. *Gladiolus communis*. Common Corn-flag.

Lin. spec. 52. *Reich.* 1. 100. *hort. cliff.* 20. upf. 16. *Thunb. Gladiol.* n. 9. *Hall. herb.* n. 1261. *Scop. carn.* n. 48. *Krock. files.* n. 55. *D'Affo aragon.* n. 31. *Curt. magaz.* t. 86. *Plenck, ic.* t. 33.

Gladiolus. *Dod. coron.* 162. *bist.* 209. *Riv. mon.* t. 110.

G. floribus uno versu dispositis—item utrinque floridus. *Bauh. pin.* 41. *Mor. bist.* 2. 343. f. 4. t. 4. f. 4, 6, 3.

G. f. Xiphion. *Bauh. bist.* 2. 701. f. 2. *Raii bist.* 1168.

G. narbonensis, *Besl. eyf. æst.* 4. t. 10. f. 3, 4. & *italicus.* *Ger.* 95. f. 1, 2. and 96. f. 3. *emac.* 104. f. 1, 2.

^a *Linn. mant.*

G. narbonensis & italicus. *Park. parad.* 189. t. 191. f. 1, 2.

α. flore rubro. Common red Corn-flag.

β. flore incarnato. Flesh-coloured or bluish Corn-flag.

γ. flore albo. White Corn-flag.

δ. *G. byzantinus*, Constantinopolitan Corn-flag.

Mill. dict. n. 3. fig. t. 142. f. 1. *Park. par. t.* 191. f. 3. *Raii bist.* 1169.

G. major byzant. *Bauh. pin.* 41. *Mor. f.* 2.

Leaves sword-shaped; flowers distant.

[2. *Gladiolus imbricatus*.

Lin. spec. 52. *Reich.* 1. 100.

Leaves sword-shaped, flowers imbricate.

3. *Gladiolus alatus*.

Lin. spec. 53. *Reich.* 1. 100. *amoen.* 6. 83. *Thunb. diff. n.* 15. *Breyn. rar.* 25. t. 12. f. 2.

Sisyrinchium viperatum. *Pluk. phyt.* t. 224. f. 8.

Leaves sword-shaped, the side petals very broad.

4. *Gladiolus tubiflorus*. Long-tubed Corn-flag.

Lin. syst. 87. *suppl.* 96. *Thunb. gladiol.* n. 23.

Ait. hort. kew. 1. 62. *Jacqu. ic.* 2. *collect.* 3. 271.

Leaves linear-lanceolate, villose, somewhat plaited, longer than the scape, tube very long, spathes bifurcate.]

5. *Gladiolus plicatus*. Hairy Corn-flag.

Lin. spec. 53. *Reich.* 1. 100. *Thunb. Glad. n.*

24. *Ait. hort. kew.* 1. 63. *Jacqu. ic. vol.* 2.

Ixia plicata. *Amoen. acad.* 4. 300.—*scillaris.* *Mill. dict. n.* 3. fig. t. 155. f. 1.

Sisyrinchium latifolium, &c. *Breyn. ic.* 22. t. 9. f. 2.

Leaves oblong-lanceolate, villose, plaited, tube longer than the spathes.

[6. *Gladiolus strictus*. Upright Corn-flag.

Ait. hort. kew. 1. 63.

Leaves linear-lanceolate, villose, plaited, tube equal to the spathe.]

7. *Gladiolus tristis*. Square-stalked Corn-flag.

Lin. spec. 53. *syst.* 86. *Reich.* 1. 101. *Thunb. diff. n.* 8. *Breyn. prodr.* 3. t. 7. f. 1. *Mill.*

fig. t. 235. f. 1. *Trew ebret.* 10. t. 39. *Curt. magaz.* t. 272.

Leaves linear-cross-shaped, corollas bell-shaped.

[8. *Gladiolus carinatus*. Spotted-stalked Corn-flag.

Ait. hort. kew. 1. 64.

Leaves linear, keeled on both sides, smooth, tube of the corolla shorter than the spathes and the borders, stigmas undivided, folded together.

9. *Gladiolus blandus*. Bluish-coloured Corn-flag.

Ait. hort. kew. 1. 64.

Leaves linear-lanceolate, nerved, smooth; flowers in spikes, the upper segment reflex; stigmas slightly two-lobed.

10. *Gladiolus undulatus*.

Lin. syst. 86. *Reich.* 1. 101. *mant.* 27. *Lour. cochinch.* 36.

Leaves sword-shaped, petals nearly equal, lanceolate, waved.]

11. *Gladiolus recurvus*.

Lin. syst. 86. *Reich.* 1. 101. *mant.* 28. *Mill.*

fig. t. 235. f. 2. *Thunb. diff. n.* 3.

Leaves sword-shaped, petals nearly equal, lanceolate, bowed back.

[12. *Gladiolus spicatus*.

Lin. spec. 53. *Reich.* 1. 101. *Thunb. diff. n.* 13.

Leaves linear, stem extremely simple, flowers in spikes.

13. *Gladiolus alopecuroides*.

Lin. spec. 54. *Reich.* 1. 102. *amoen.* 4. 301.

Thunb. diff. n. 14.

Ixia plantaginea. *Ait. hort. kew.* 1. 59.

Leaves linear, spike distich, imbricate.]

14. *Gladiolus angustus*. Narrow-leaved Corn-flag.

Lin. spec. 53. *Reich.* 1. 102. *hort. cliff.* 20. t. 6.

Mill. fig. t. 142. f. 2. *Thunb. diff. n.* 21.

Breyn. ic. t. 7. f. 2? *Jacqu. ic. vol.* 2.

Leaves linear, smooth, flowers in spikes, distant, the upper segment of the corolla straight; stigmas spatulate, undivided.

[15. *Gladiolus flavus*. Yellow Corn-flag.

Ait. hort. kew. 1. 65.

Leaves lanceolate-sword-shaped, flat; the throat of the upper lip of the corolla has three laminae, shaped like the nail, and placed perpendicularly; bractes acuminate.

16. *Gladiolus securiger*. Copper-coloured Corn-flag.
Ait. hort. kew. 1. 65.
Leaves linear-sword-shaped, flat; throat of the upper lip has three laminas, shaped like the nail, and placed perpendicularly, bractes obtuse.
17. *Gladiolus ramosus*.
Lin. spec. 53. Reich. 1. 102.
Stem branched, leaves linear.
18. *Gladiolus capitatus*.
Lin. spec. 53. Reich. 1. 102.
Moræa cœrulea. Thunb. diff. n. 15.
Stem branched, heads peduncled, root tuberous.
19. *Gladiolus crispus*.
Lin. syst. 86. suppl. 94. Thunb. diff. n. 7. t. 1.
Leaves lanceolate, crenate, waved, flowers directed the same way, spikes two, tube filiform, long.
20. *Gladiolus junceus*.
Lin. syst. 86. suppl. 94. Thunb. diff. 18.
Leaves broad-lanceolate, culm branched, flowers directed the same way, style six-parted.
21. *Gladiolus anceps*.
Lin. syst. 86. suppl. 94. Thunb. diff. n. 17. t. 2.
Ixia Lapeirousia. Gmel. syst. 108.
Leaves sword-shaped, waved, stem branched, ancipital, divaricate.
22. *Gladiolus gramineus*.
Lin. syst. 86. suppl. 95. Thunb. diff. n. 26.
Petals lanceolate, bristle-shaped, acuminate.
23. *Gladiolus marginatus*.
Lin. syst. 86. suppl. 95. Thunb. diff. 20.
Ixia marginata. Ait. hort. kew. 1. 59.
Leaves cartilaginous-margined, smooth, many-nerved, spike lengthened, flowers alternate, nodding.
24. *Gladiolus montanus*.
Lin. syst. 86. suppl. 95. Thunb. diff. n. 1. t. 1.
Leaves sword-shaped, nerved, smooth, flowers in spikes, corolla ringent.
25. *Gladiolus falcatus*.
Lin. syst. 87. suppl. 95. Thunb. diff. n. 4. t. 1.
Stem simple, leaves sickle-shaped, flowers alternate, style trifid.
26. *Gladiolus flexuosus*.
Lin. syst. 87. suppl. 96. Thunb. diff. n. 2. t. 1.
Leaves linear, stem simple, flexuose, flowers in spikes, ringent, tube long.
27. *Gladiolus longiflorus*. Long-flowered Corn-flag.
Lin. syst. 87. suppl. 96. Thunb. diff. n. 22.
Ixia longiflora. Berg. cap. 7. Ait. hort. kew. 1. 58.
—paniculata. La Roche diff. 26. t. 1.
Stem round, tube of the corolla very long, spathes and leaves linear, smooth.
28. *Gladiolus spathaceus*.
Lin. syst. 87. suppl. 96. Thunb. diff. n. 25.
Stem branched, flowers in imbricate spikes, spathes membranaceous, awned, leaves plaited.
29. *Gladiolus setifolius*.
Lin. syst. 87. suppl. 96. Thunb. diff. n. 19.
Stem branched, corolla ringent, the lowest leaf filiform-setaceous.
30. *Gladiolus Cardinalis*. Superb Corn-flag.
Curtis magaz. t. 135.
Leaves sword-shaped, many-nerved; flowers directed the same way, many on a stem; corolla upright, with a bell-shaped border.

DESCRIPTIONS, &c.

These are herbaceous perennial plants, with a tuberous coated root; a simple stalk; the flowers specious, in spikes, with a spathe to each flower. The germination as in the *Ixia*, with the lobe absolutely sessile*.] Most of them, except the first, known only to modern times, and natives of the Cape.

1. Root round, compressed, yellowish, covered with a brown furrowed skin; hence spring two sword-shaped leaves, embracing each other at the base, and between them rises the flower-stalk, growing near two feet high, having one or two narrow leaves embracing it like a sheath, and terminated by five or six purple flowers, one above another at some distance, ranged on the same side of the stalk. The spathe covers the flower-bud before it expands, but splits open lengthwise when it opens, and shrivels

* Jussieu.

up to a dry skin, remaining about the seed-vessel till the seeds are ripe. The three upper segments of the corolla are near together, the lower one turns down, and the two side segments spread open at top, but are curved downwards at bottom.

[The three lower segments are marked with a white spot. Seeds imbricate, as far as eight in one cell.

It was cultivated by Gerarde in his garden in 1596^b, and it was even then very common.

He gives the names not only of Corn-flag, but Corn-sedge, and Corn-Gladin. Johnson adds that of Sword-flag.

Mr. Miller makes three species of this: 1. the common sort, described above; *G. flor. uno versu dispositis* of C. Bauh.—with the flowers disposed on one side the stalk, varying with white and flesh-coloured flowers. This Gerarde calls Italian Corn-flag.—2. the Italian (*G. Italicus*.)—*utrinque floridus* of C. Bauh.—with flowers on each side the stalk; of which he says there is also a variety with white flowers.—This Gerarde and Parkinson figure under the name of French Corn-flag.—3. The great Corn-flag of Byzantium (*G. Byzantinus*), which has larger roots, but of the same form; the leaves also are much broader and larger, with deeper channels. The flower-stalks rise higher, the flowers are much larger, of a deeper red colour, and the sheaths are longer. It makes a fine appearance when in flower, and is worthy of a place in every good garden; the rather, because the roots do not increase so fast as to be troublesome.

[Parkinson, besides the French, Italian and Byzantine Corn-flags, has three varieties—the blush, white, and small purple. He observes that Gerarde mistook the French for the Italian: and that John Tradescante assured him, that he saw many acres of ground in Barbary spread over with them.

2. Flowers small, all directed one way, and imbricate. Native of Russia^c.

3. Stem a span high, thickish, flexuose between the flowers. Leaves streaked, smooth, bluntish, those next the flowers shorter, in a double row. Upper lip of the corolla sickle-shaped, narrow; side petals or wings of the same length, rhomb-shaped, very broad; lower lip three-parted, the leaflets ovate and equal. Native of the Cape of Good Hope^d.

4. Leaves a span long and more. Stem round, villose, a finger's length. Flowers sessile, mostly on one side. Bractes three at the base of each germ, hirsute, acuminate; the outer an inch and half long; the inner half that length. Tube of the corolla filiform-cylindric, twice as long as the spathes, violet, fading to white: border funnel-shaped, six-parted; divisions lanceolate, acuminate, a quarter only of the length of the tube, straw-coloured; the three upper ones beyond the middle reflex, with a forked red spot at the base, and an angular very deep red spot in the middle of the side ones; the three lower divisions have no spot. Stigmas somewhat wedge-shaped, villose above. Native of the Cape of Good Hope, where it was found by Thunberg and Masson. It flowers in June; and was introduced in 1774^e.

5. Leaves plaited at the nerves. Flowers two or three, violet, fading to white. Bractes in threes, narrow, the outer one largest^f.]

Root round, compressed, about the size of a small Spring Crocus; the skin red: from this arise five or six sword-shaped, hairy leaves, from two to four inches long, and one third of an inch broad, dark green, sitting close at the base, but spreading upwards, like the sticks of a fan: between these rises the flower-stalk, six or eight inches in length, naked to the top, terminated by a spike of deep blue flowers: corolla divided to the base into six obtuse parts, equal in size and position. Style the length of the stamens dividing into three parts, each crowned by a roundish stigma. It flowers in May, and the seeds ripen in July; soon after which the stalk and leaves decay to the root^g.

^b Hort. kew.^c Hort. kew.^d Linn. spec.^e Linn. spec.^f Linn. amoen.^g Mill. fig.

Cultivated in 1757, by Mr. Miller^a; who raised it from seeds which were sent him from the Cape of Good Hope.

[6. This varies with a deep blue corolla; the tube and the base of the segments a very dark purple: and with a pale purple corolla, the tube blue. It was found at the Cape by Mr. Francis Masson, and introduced in 1774. It flowers in Juneⁱ.]

7. From the root come out two or three narrow leaves, a foot and half long, having a longitudinal furrow in the middle, and ending in acute points; they are of a deep green, and stand erect. Between these arises a slender taper stalk, about the same length as the leaves, having one or two short acute-pointed leaves on the lower part, embracing the stalk at their base. Flowers alternate, distant. Tube of the corolla curved downward, and not so long as in most of the other sorts; segments acute, and nearly equal: pale yellow or sulphur colour. Filaments long, erect; anthers pyramidal, dirty white. Style slender, terminated by a trifid, reflex stigma. It flowers the end of May, and the seeds ripen about six weeks after^k.

[Linneus gave the name of *tristis* to this species, from the gloomy colour of its flowers. They are very frequently of a pale yellow or sulphur-colour (as described above) shaded in particular parts with very fine pencillings, especially on the under side^l: but they vary much with different shades of white and green, yellow, flesh-coloured, blue, purple and violet. Thunberg has distinguished sixteen of these varieties. It is commonly said to produce only two flowers on a stem, but there are frequently more. They generally give forth a most agreeable fragrance in their expansion.

The leaves very characteristically distinguish this species^m: they are alternately sheathing, linear, acute, striated, smooth, quite entire, two or three in number, the upper ones gradually shorter; the lowest is thickish, scored with a deep groove within the edge, the rest resemble the spathes, and are convoluted, but they are longerⁿ.

Native of the Cape of Good Hope, and cultivated in 1745, by Mr. Miller^o.

8. Stalk a foot and half high, and round. Leaves longer than the stalk. Flowers sweet: tube subcylindric, little more than half an inch in length, whitish; border subcampanulate, subringent; the three upper divisions obovate-oblong, twice as long as the tube, pale violet; the three lower narrower, that in the middle the same length with the three upper ones, yellow below the middle; the side ones shorter, yellow in the middle.—Native of the Cape. Mr. Francis Masson. Introduced 1774. It flowers in April and May^p.

9. Tube of the corolla narrow, compressed, little bent, an inch and half in length, pale red. Upper division of the border oblong, acute, concave in the middle, and there dilated, above the middle reflex, whitish flesh-colour, the same length as the tube; the two side divisions oblong-lanceolate, spreading, reflex at the tip, flesh-coloured, a little shorter than the upper one; the three lower divisions linear-lanceolate, from erect spreading, above the middle a little reflex, whitish flesh-colour, with a red transverse spot in the middle, a little shorter than the upper ones; the middle ones sharper than the others. Filaments white, half the length of the corolla; anthers oblong, linear, erect, blue. Style white, longer than the filaments: stigmas three, patulous, dilated at the tip into two-lobed laminae villose at the edge.—Native of the Cape of Good Hope. Mr. Francis Masson. Introduced 1774. It flowers in June^q.

10. This is of the same stature with the common sort. Stalk a foot and half in height. Leaves streaked. Flowers alternate, in a double row. Proper spathes two-leaved, the inner leaf smallest. Tube of the corolla long, filiform: the six parts of the border nearly equal, in form of a Lily, waved, especially

the alternate ones.—Intermediate between this genus and *Ixia*.—Native of the Cape. See n. 14.

11. This differs from the foregoing, in the petals not being waved, and being less acuminate; the tube of the corolla not filiform, lax or pendulous: in other respects this is very like it^r.]

Stalk slender; has more leaves upon it than *G. tristis*. The flowers are ranged on one side the stalk towards the top, and stand pretty far asunder. Corolla curved; segments of the border almost equal, ending in blunt points; the lower segments turning downwards, the upper erect, and spreading open: the colour pale blueish, approaching to white; each segment marked with a broad purple divided line along the middle. Anthers purplish, oblong, erect. Style of the same length with the stamens, crowned by a trifid reflex style. The flowers have an agreeable odour; they appear at the end of May, and the seeds ripen in July. It was raised in the Chelsea garden, from seeds which came from the Cape of Good Hope, and flowered there before the year 1760^s.

[12. Scape simple, round, sheathed, erect, a span high. Leaves four, alternate, linear, smooth, the lower gradually shorter. Flowers distich, imbricate, blue, about twelve pairs in a spike of an inch in length. It differs from the next species in having larger flowers, on a shorter spike, but broader and ovate; and a simple scape^t.

13. The spike covered as in Plantain, with very numerous small flowers; but in a double row^u. It varies with the scape simple and branched, with corollas white and blue^v. This, and n. 12. are natives of the Cape.

14. Scape simple, or but little branched, sheathed, round, striated, smooth, flexuose-erect, a foot high. Leaves from long sheaths, ensiform, marked with white elevated streaks, entire, smooth, shorter than the scape, the upper ones gradually smaller. Flowers all on the same side, ascending, on one or two spikes, a hand in length. Rachis angular, flexuose, twisted, smooth. Spathes the length of the tube of the corolla, shorter than the branches, green. Segments of the border of the corolla usually waved.—The same, according to Thunberg, with n. 10^w.

Cultivated in 1757, by Mr. Miller^x.

15. This differs from the next species in having the bractes acuminate, the whole corolla intensely yellow, and the leaves a little broader. It was found near the Cape, by Mr. William Paterson; and was introduced in 1780, by the Countess of Strathmore. It flowers in February and March^y.

16. Leaves smooth, more than a span in length. Stalk roundish, a little shorter than the leaves, sometimes branched. Bractes short, ovate, obtuse, sometimes gashed at the tip, membranaceous. Corollas pale tawny: tube funnel-shaped, less than an inch in length; segments of the border oblong-ovate, obtuse, sometimes obscurely emarginate, shorter than the tube; the three upper ones having in the chaps a yellow spot with a border of red round it, and three flat, obtuse, yellow laminae, a line and half in diameter. Native of the Cape. Mr. Francis Masson. Introduced in 1774. It flowers in May^z.

18. A very large plant, with blue flowers^{aa}. This and the foregoing are natives of the Cape. See *Moraea*.

19. Leaves long. Stem round, with one or two crenate, waved leaves on it. Flowers numerous, upright. Glumes obtuse, with a scarious, toothletted, red margin. Tube of the corolla twice as long as the border.—It is wholly different from *Ixia crispa*, in having lanceolate leaves, even on the stem; the tube of the corolla eight times as long as the glumes, and the petals lanceolate: whereas that has linear leaves, and a leafless stalk; the tube of the corolla hardly longer than the glume, and the petals obovate. This also is two feet high, and that only about four inches.

Found at the Cape by Sparrmann.

^a Hort. kew.

ⁱ Curtis.

^o Hort. kew.

^k Ibid.

^m Ibid.

^p Ibid.

^q Mill. fig.

ⁿ Thunberg.

^r Ibid.

^s Linn. mant.

^t Linn. spec.

^u Hort. kew.

^v Mill. fig.

^w Thunberg.

^x Ibid.

^y Linn. spec.

^z Thunberg.

^{aa} Ibid.

^{bb} Ibid.

20. Stem a hand only in height, filiform, smooth, with one or two patulous branchlets. Leaves smooth and even, shorter by half than the stem. Flowers alternate, sessile. Glumes ovate, entire. Corolla violet-coloured, with a filiform tube longer than the border. Found at the Cape by Thunberg.

21. Leaves streaked, shorter than the stem; those on the branches short, but not narrower, decurrent, with a curled keel. Flowers alternate, at the tips of the branches. Spathes very obtuse, purple at the edge. Tube of the corolla three or four times as long as the border.—This is allied to *Ixia corymbosa*, and resembles it in its angular stalk; but differs both from that and the *palmaris* in the long, filiform tube of the corolla.

22. Stem more than a foot high, round, smooth and even, with few flowering branches. Leaves grassy, almost the length of the stem, smooth and even, nerved, lax. Flowers few at the ends of the stem and branches. Spathes ovate, acuminate. Corollas whitish, with a violet-coloured base, small, without a tube, six-parted^a.

23. Leaves a foot long, sword-shaped, smooth and even, with the edges three times as thick as the rest. Stems the thickness of a goose-quill. Spike very long, slightly flexuose between the flowers. Spathes distant, the length of the bractes, which are often jagged at the tip. Tube of the corolla twice as long as the spathes: segments of the border nearly equal, oblong, elliptic, purple.

24. Root-leaves narrow, linear, not above a line in breadth, but nearly the length of the stem, smooth and even. Stem round, leafless. Spike oblong, with the flowers rather remote. Upper lip or helmet of the corolla three-parted; the middle segment arched or bowed in, channelled, linear, ovate at the tip; lateral segments spreading, divaricate, bowed back, obovate, longer than the claw: lower lip three-parted, equal; segments obovate, purple, with a long claw. The stamens are under the middle segment of the upper lip.—This, with the three foregoing, was found at the Cape by Sparrmann.

25. Scape compressed, striated, flexuose, smooth, a hand in height. One or two leaves; obversely stem-clasping, ovate-lanceolate, sickled, bluntish, entire, striated, smooth. Spathes green, obtuse, much shorter than the tube. Corolla blue, with a spreading border. Allied to *Ixia excisa*:—and perhaps rather a species of that genus.

26. Scape round, flexuose, erect, smooth, a foot high. Leaves none in flowering time. Spathes oblong-lanceolate, acuminate, smooth, shorter than the tube of the corolla. Spike ovate, four or five-flowered. Corolla whitish flesh-colour, with a tube double the length of the spathe, and a ringent border.

27. Scape round, simple and many-spiked, erect, smooth, a foot high and more. Leaves three or four, ensiform, nerved, smooth, shorter than the scape. Flowers alternate, pale flesh-colour, very many, close. Bractes membranaceous, striated, very short. Tube of the corolla from an inch to two inches in length, widening at top, curved, erect. It has the appearance of an *Ixia*, but the curved tube and situation of the border separate it from that genus.

28. Scape sheathed, a span high, terminated by several spikes. Leaves ensiform, nerved, villose, the length of the scape. Flowers whitish, with the tube of the corolla many times longer than the spathes. Spikes imbricate, a finger's length. Spathes membranaceous, often torn, awned. It resembles *G. tubiflorus* and *plicatus*, but differs in the spathes.

29. Scape many-spiked, very seldom simple, flexuose-erect, smooth, a hand high, with round erect branches. Leaves about three, linear-bristle-shaped, gradually shorter, the lowest very long, equalling the scape. Flowers alternate, white, ringent, with the tube scarcely longer than the spathes. These were all found at the Cape of Good Hope by Thunberg^c.

30. Flowers fine scarlet, with large white some-

^a Linn. suppl.

^c Thunb. diff.

what rhomboidal spots on several of the lowermost divisions of the corolla: strong plants will throw up a stem three or four feet high, dividing at top into several branches. It flowers with us in July and August; and is most probably a native of the Cape. Introduced from Holland a few years since, by Mr. Græffer, now gardener to the King of Naples. It first flowered with Messrs. Lewis and Mackie, nursery-men at King'sland, and in 1790 at Messrs. Grimwood's and Co. at Kensington^f.]

PROPAGATION AND CULTURE.

1. The first requires no care; for when it is once planted in a garden, it will multiply too fast, so as to become a disagreeable weed. The Byzantine Corn-flag has now, therefore, generally taken its place. This is propagated by offsets which are sent off from the roots in the same manner as Tulips. The roots may be taken out of the ground the end of July, when their stalks decay, and may be kept out of the ground till the end of September, or the beginning of October, at which time they should be planted in the borders of the flower-garden, where they will thrive in any situation, and being intermixed with other flowers of the same growth, they will add to the variety.

The Cape forts may be increased by offsets, which should be planted in a warm border of kitchen-garden earth, and in winter they should be covered with glasses or mats to guard them from frost; for I have with a slight shelter preserved those which were in pots under a common frame, and some which were planted in the full ground, when the frost has not been severe; and I have always found that those plants which were hardily treated, grew much stronger than those which were placed in a moderate degree of warmth; so that where there is a convenience of covering a warm border with glasses in the winter, if these roots are planted in the full ground, where they may be protected from frost, there will be a greater probability of their flowering than in any other method of culture.

And also by seeds, which are frequently perfected in England; these should be sown at the end of August, in pots filled with light earth, and placed in a shady situation till the middle of September; then the pots should be removed where they may have the sun great part of the day, and in October they must be placed under a hot-bed frame, where they may be protected from frost and great rains, but enjoy the free air in mild weather. In the spring the young plants will appear, when they will require a little water once in eight or ten days, but it should be given them sparingly, for too much wet will rot these tender bulbs. In May, when the danger of frost is over, the pots should be removed to a sheltered situation, where they have the morning sun till noon; and, if the season proves dry, they must be now and then refreshed with water. Towards the latter end of June, the leaves of these plants will decay; then the roots should be taken up, and may be mixed with sand, and kept in a dry room till the end of August, when they should be planted again; and as the roots are small, four or five may be planted in each halfpenny pot, filled with light earth; these should be placed where they may have only the forenoon sun, till the middle of September, when they should have a warmer situation; and in October they must be placed under a hot-bed frame as before, and treated in the same way during the winter season; and in the spring they must be placed in the open air till their leaves decay, when they may be again taken out of the ground, and treated in the same manner as before; but as the roots will have grown to a larger size when they are planted again, they should each have a separate half-penny pot, because now they will be large enough to flower, and may be treated as the old roots.

[GLADIOLUS. See *Antholyza*, *Butomus*, *Dracæna*, *Ferraria*, *Iris*, *Lobelia*, *Pontederia*.

GLASSWORT. See *Salicornia*.

White. See *Cenopodium*.

GLASTENBURY THORN. See *Mespilus*.

Glauci affinis. See *Astragalus*.

^f Curtis.

GLAUCIUM. See *Chelidonium*.

GLAUROIDES. See *Peplis*.]

GLAUX (of *Pliny*, *Γλαυξ* of *Dioscorides*. Derivation uncertain: some deduce it from *γάλα*, milk.)

[*Lin. gen. n.* 291. *Reich.* 314. *Schreb.* 408. *Tournef.* 60. *Juss.* 333.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Calycanthemæ*. *Salicariæ* *Juss.*

GENERIC CHARACTER.

CAL. none, unless the corolla be called so.

COR. Petal one, five-parted, bell-shaped, upright, permanent; segments obtuse, rolled back.

STAM. Filaments five, subulate, upright, the length of the corolla. Anthers roundish.

PIST. Germ ovate. Style filiform, the length of the stamens. Stigma capitate.

PER. Capsule globular, acuminate, one-celled, five-valved.

SEEDS five, roundish. Receptacle very large, globular, hollowed for the reception of the seeds.

OBS. The cover of the flower is perhaps a calyx more properly than a corolla.

ESSENTIAL CHARACTER.

Cal. one-leafed, bell-shaped. Cor. none. Caps. one-celled, five-valved, five-seeded.

SPECIES.

1. *Glaux maritima*. Sea Milkwort, or Black Saltwort.

Lin. spec. 301. *Reich.* 1. 585. *hort. cliff.* 43.

fl. lapp. 72. *suec. n.* 210. *Huds. angl.* 101.

With. 246. *Relb. cant. n.* 190. *Pollich pal.*

n. 238. *Krock. files. n.* 362. *t.* 39. *Sowerby*

engl. bot. t. 13. *Fl. dan. t.* 548. *Sabb. hort. i.*

t. 31. *Berg. phyt. 2.* 79. *Baub. pin.* 215.

Raii syn. 285.—minor. *Park. theat.* 1283. 2.

G. exigua marit. *Lob. obs.* 227. 2. *Ger.* 448.

emac. 562. *Baub. hist.* 3. 373. *Raii hist.* 1102.

Alfine bifolia, fr. coriandri, rad. geniculata. *Loefcl. pruss.* 13. *t.* 3.

DESCRIPTION, &c.

Root perennial, creeping. Stems trailing, jointed; branched a little. Leaves sessile, oval-oblong, or oval-lanceolate, succulent; opposite at bottom but among the flowers alternate. Flowers almost sessile, axillary, solitary, from about the middle of the stem, purple, greenish white, white or striped^a.

On the sea-coast, and on salt marshes at a distance from the sea. Even about Upsal, which is very far from the sea^b.—It is a pretty little plant, enlivening large tracts of the dreary situations where it is found. The whole plant is succulent and salt to the taste^c. Cows eat it. It flowers in June and continues the rest of the summer.] It is seldom cultivated in gardens.

GLAUX. See *Andrachne*, *Astragalus*, *Isnardia*, *Peplis*.

GLECHOMA. (From *γληχων*, the name of a plant in *Dioscorides*.)

Engl. Ground-Ivy.

Fr. Terrette, *Lierre terrestre*.

[*Lin. gen. n.* 714. *Reich.* 773. *Schreb.* 970. *Juss.* 113.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Verticillatæ*. *Labiata* *Juss.*

GENERIC CHARACTER.

CAL. Perianth one-leafed, tubular, cylindric, streaked, very small, permanent: mouth five-cleft, acuminate, unequal.

COR. one-petalled, ringent. Tube slender, compressed: upper lip erect, obtuse, semibifid; lower spreading, larger, obtuse, trifid; middle segment larger, emarginate.

STAM. Filaments four, under the upper lip, of which two are shorter. Each pair of anthers converging in form of a cross.

PIST. Germ four-cleft. Style filiform, bending beneath the upper lip. Stigma bifid, acute.

PER. none. Calyx cherishing the seeds in its bosom.

SEEDS four, ovate.

ESSENTIAL CHARACTER.

Cal. five-cleft. Each pair of anthers converging in form of a cross.

^a Lyons M. S. ^b Pollich, Krock.

^c Engl. bot.

^d Lin. suec.

SPECIES.

1. *Glechoma hederacea*. Ground Ivy.

Lin. spec. 807. *Reich.* 3. 47. *hort. cliff.* 307.

fl. suec. n. 518. *mat. med.* 149. *Huds. angl.* 254.

With. 603. *Curtis lond.* 2. 44. *Woodv. med.*

bot. 84. *t.* 28. *Lightf. scot.* 307. *Relb. cant.*

n. 429. *Pollich pal. n.* 554. *Neck. gallob.* 251.

Allion. pedem. n. 93. *Krock. files. n.* 922. *Fl.*

dan. t. 789. *Berg. phyt.* 2. 61. *Fl. russ. t.* 61.

Calamintha hederacea. *Scop. carn. n.* 730.

Chamæclema caule procumbente radicato, fol. reniformibus rotunde crenatis. *Hall. helv. n.* 245.

Chamæcissus. *Fuchs. hist.* 876. *Baub. hist.* 3. 855. 2.

Hedera terrestris. *Dod. pempt.* 394. *Lob. ic.* 1.

613. 2. *Matth.* 626. *Ger.* 705. *emac.* 856. 1.

Raii hist. 567.—vulgaris. *Baub. pin.* 306. *Park.*

theat. 676. *n.* 1, 2. *f.* 677. *Mor. hist. f.* 11. *t.* 21.

f. 1. *Rivin. mon. t.* 67. 2. *Blackw. t.* 225.

β. *Hedera terrestris montana*. *Baub. pin.* 306.

Park. theat. 677. 3. *Ger. emac.* 704. 6. *Riv.*

mon. 67. 1. *Vaill. par. t.* 6. *f.* 5. *Raii hist.* 567. 2.

syn. 243. *Mor. f.* 2.

Leaves kidney-shaped, crenate or scalloped.

DESCRIPTION, &c.

Root perennial, sending out trailing four-cornered shoots, producing roots at the joints, and spreading wide. The flowering stalks spring from the joints, which are woolly; these are upright but weak, square, hirsute with hairs turning downward, from four to six inches high. Leaves opposite, wrinkled, somewhat hairy, on grooved petioles, as long as the leaves; they are beset underneath with hollow dots, in which are glands secreting an essential oil, and above with little eminencies, but which do not secrete any odoriferous oil, so that this surface being rubbed gives out no peculiar scent, whereas the under surface affords a pleasant reviving smell^d. Peduncles axillary, opposite, short, branched, supporting from three to five flowers. There is a pair of floral leaves at the branching of the peduncle, and another pair under each of the lateral flowers, they are subulate, or setaceous, and very small; the middle flower has none. Calyx hairy, streaked, with the teeth nearly equal. Corolla blue (sometimes varying to white) the large middle segment of the lower lip marked with purple spots of a deeper colour, and hairy at the base. Stamens sometimes in the spring imperfect, with filaments only half the usual length, terminated by a reddish blunt point, or sometimes by effete anthers: when perfect, the anthers, after bursting, form a cross, or the shape of the letter X^e.

It is very strange that Scopoli should deny this character, no less evident than beautiful and singular. We can account for it only by supposing, that he must have examined the flowers when they were in an imperfect state, which they frequently are early in the spring.

The leaves are often deformed with red hairy tumours, which are the galls of the *Cynips Glechomæ*^f. It gradually expels plants which grow near it, and thus impoverishes pastures^g. The leaves were formerly thrown into the vat with ale to clarify it, and to give it a flavour. This was called Gill-ale; Ground-Ivy being named Gill or Gill-creep-by-ground, in some places. From this use of the plant, and the form of its leaves, it has also the names of Ale-hoof and Tun-hoof^h, &c. but it has gradually grown into disuse since the introduction of Hops. Cattle seem rarely to touch it; according to Linneus, sheep eat it, horses are not fond of it, and it is refused by cows, goats, and swine. It is said to be injurious to horses, if they eat much of it. The expressed juice, mixed with a little wine, and applied morning and evening, destroys the white specks upon horses eyesⁱ.

Ground-Ivy has a peculiar strong smell, and a bitterish taste, somewhat aromatic. It was formerly

^d Withering.

^e Curtis, Lyons M. S. ^f Withering and Stokes in Withering.

^g Linn. and Lightf. ^h Linn. suec. ⁱ Ray and Wither.

^j Linn suec. from Loefcl.

in considerable credit for pectoral, detergent, aperient, diuretic, corroborant, and other qualities; and was recommended particularly in pulmonary and nephritic complaints. In obstinate coughs it is still a favourite remedy with the common people; but it is little prescribed by medical practitioners, and is wholly discarded from the materia medica of the London College. Mr. Ray gives a remarkable instance of its efficacy in removing a violent and inveterate head-ach by drawing the juice of the plant up the nostrils: but Dr. Cullen will not allow it to act any otherwise than as an errhine. He also thinks the use of it in ale to be frivolous; and affirms, that in many cases where he had seen it employed, there was no evidence either of its diuretic or pectoral effects^k.

It is most usually taken in form of an infusion or tea; the expressed juice is also used with honey in coughs: a conserve or syrup is also made with it. The distilled water cannot be of any avail. Some foreign physicians seem to have a better opinion of this herb than ours.

It is so common under hedges, on banks, in woods, and sometimes in dry pastures, that it is never cultivated in gardens. It varies in size, as well as the degree of colour in the flower, according to its situation. The flowers appear in april, may, and june. Thunberg observed it in Japan.

A plant so common, and so much esteemed by the multitude, has of course many names. To such as are given above we may add those of Cat's-foot, Hay-maids, and Robin-run-in-the-hedge. In German it is *Gundelreben*, *Gundermann*, *Grundermann*, *Gundelrab*, *Gundrebe*, *Grundrebe*, *Gunderlunze*, *Donnerrebe*, *Erdepheu*, *Erdenkranzlein*, *Meerwurz*; in Dutch *Aardveil*, *Hondsdras*, *Onderhave*; in Danish *Vedbende*; in Swedish *Fordrefvot*; in Italian *Ellera terrestre*; in Spanish *Hiedra terrestre*.

GLECOMA. See *Glechoma* and *Stachys*.]

GLEDITSIA. (So named by Linneus in honour of J. Gottlieb Gleditsch, of Leipsick, professor at Berlin; defender of Linneus against Siegesbeck; author of *Methodus Fungorum*, 1753. *Systema Plantarum a staminum situ*, 1764. and many other smaller works.)

Lin. gen. n. 1159. *Reich.* 1272. *Schreb.* 1596. *Clayton. Juss.* 346. *Gartn. t.* 146. *Melilobus. Mitch.* xv.

Class. 23. 2. Polygamia Dioecia.

Nat. order of *Lomentaceæ*. *Leguminosæ* Juss.

GENERIC CHARACTER.

* Male, a long, compact, cylindric ament.

CAL. Perianth proper three-leaved (three-cleft, G.) leaflets patulous, small, acute.

COR. Petals three, roundish, sessile, patulous, like the calyx. Nectary turbinate, with the other parts of the fructification growing to the mouth.

STAM. Filaments six, filiform, longer than the corolla. Anthers incumbent, oblong, compressed, twin.

* Hermaphrodite in the same ament with the males, usually terminating.

CAL. Perianth four-cleft, otherwise as in the male.

COR. Petals four, otherwise as in the male. Nectary as in the male.

STAM. as in the males.

PIST. PER. and SEED as in the female:

* Female, a lax ament, on a distinct plant.

CAL. Perianth proper as in the male, but five-leaved (five-cleft, G.)

COR. Petals five, long, sharp, from upright-spreading. Nectaries two, short, like filaments.

PIST. Germ broad, flattened, longer than the corolla. Style short, reflex. Stigma thick, the length of the style, along which it grows, pubescent at top.

PER. Legume very large, broad, extremely flattened, divided by several transverse partitions, and filled with pulp.

SEEDS solitary, roundish, hard, shining.

ESSENTIAL CHARACTER.

HERM. Cal. four-cleft. Cor. four-petalled. Stam. six.

Pist. one. Legume.

^k Lewis, Curtis, Woodville.

MALE. Cal. three-leaved. Cor. three-petalled. Stam. six.

FEM. Cal. five-leaved. Cor. five-petalled. Pist. one. Legume.

SPECIES.

1. *Gleditsia triacanthos*.

Lin. spec. 1509. *Reich.* 4. 354. *hort. ups.* 298. *cliff.* 489. *Græn. virg.* 183. *Gouan monsp.* 520. *Mill. dict. n.* 1. *Hort. angl. t.* 21. *Pluk. mant.* t. 352. f. 1.

2. *G. polysperma*. Three-thorned Acacia.

Legumes with many seeds; leaflets linear-oblong.

3. *G. monosperma*. Single-seeded or water Acacia.

G. inermis. *Lin. spec.* 1509. *Reich.* 355. *Mill. dict. n.* 2. fig. t. 5. (Acacia). *Catesb. car.* 1. t. 43. (Acacia). *Dubam. arb.* 1. 266. *Pluk. alm. t.* 123. f. 3. (Acacia). *Gartn. fruct.* 311. t. 146. *Hoult. reliqu. t.* 26.

Legumes one-seeded, leaflets ovate-oblong, spines few.

4. *G. horrida*. Strong-spined Acacia.

Ait. hort. kew. 3. 444.

Leaflets ovate-oblong, spines very frequent—in all the varieties axillary, and commonly triple.

DESCRIPTION, &c.

1. 2. This tree is common in most parts of North America, where it is known by the name of Honey Locust; it is called by the gardeners here Three-thorned Acacia. It rises with an erect trunk to the height of thirty or forty feet, and is armed with long spines, three or four inches long, which have two or three smaller ones coming out from the side, and are frequently produced in clusters at the knots of the stem. Leaves bipinnate, composed of ten pairs of leaflets, of a lucid green and sessile. The flowers come out from the side of the young branches, and being of an herbaceous colour, make no figure. Legume near a foot and half long, and two inches broad. Seeds smooth, surrounded by a sweet pulp.

The leaves seldom come out till june in this country, and the flowers not till the end of july. This tree does not produce any flowers till it is of a large size. There was one in the Bishop of London's garden at Fulham, which produced pods in the year 1728, that came to their full size, but the seeds did not ripen.

[It appears from Plukenet that it was cultivated by Bishop Compton in 1700¹.]

3. This has much the appearance of the other, but has fewer spines. The leaves are smaller, and the pods are oval, containing but one seed. It was discovered by Mr. Catesby in Carolina.

[Legume coriaceous, thin, very much compressed, pedicelled, unequally elliptic, scarcely opening spontaneously, the valves being connected outwardly by a thin cellular substance. It contains only one seed, which is elliptic, flattish on both sides, hard, very smooth, shining, of a yellowish-bay colour; and thus differing much from the first, which has a very large, broad legume, very much compressed, with several transverse partitions, and filled with pulp^m.]

PROPAGATION AND CULTURE.

These trees are propagated by seeds, which must be procured from America; those of the first are annually sent to England in plenty, by the title of Locust, or Honey Locust, to distinguish it from the false Acacia, which is frequently called Locust-tree in America; these seeds may be sown upon a bed of light earth in the spring, burying them half an inch deep; and if the spring should prove dry, they must be frequently watered, otherwise the plants will not come up the first year, for sometimes the seeds remain two years in the ground before they come up; therefore those who are desirous to save time, should sow the seeds as soon as they arrive, and plunge the pots into a moderate hot-bed, observing to water them frequently; by this method most of the plants will come up the same season, but these should be gradually inured to bear the open air, for if they are continued in the

¹ Hort. kew.

^m Gartner.

hot-bed, they will draw up weak; during the summer season, those plants in pots will require frequent waterings, but those in the full ground will not dry so fast, therefore need no water, unless the season should prove very dry. In autumn, those in the pots should be placed under a hot-bed frame to protect them from frost, for these young plants generally keep growing late in the summer, and the upper part of their shoots being tender, the early frosts of the autumn often kill the ends of them, if they are not protected, and this frequently occasions great part of the shoots decaying in winter; for which reason those plants in the full ground should be covered with mats in autumn, on the first appearance of frost; for a small frost in autumn will do more mischief to these young shoots which are full of sap, than severe frost when the shoots are hardened.

The following spring they may be transplanted into nursery-beds, at a foot distance row from row, and six inches asunder in the rows; but this should not be performed till April, after the danger of hard frost is over; for as the plants do not put out their leaves till very late, there will be no hazard in removing them any time before May. If the season should prove dry, they must be watered; and if the surface of the beds is covered with moss, or mulch, to prevent the earth from drying, it will be of great service to the plants. In these beds the plants may remain two years, during which time they must be constantly kept clean from weeds; and in the winter there should be some rotten tan, or other mulch, spread over the surface of the ground to keep out the frost. If the plants thrive well, they will be fit to transplant to the places where they are to remain after two years growth, for they do not bear removing when large; the best season for transplanting these trees, is late in the spring; they thrive best in a light deep soil, for in strong shallow ground they become mossy, and never grow large; they should also have a sheltered situation, for when they are much exposed to winds, their branches are frequently broken in the summer season, when they are fully clothed with leaves.

[This being an elegant tree, it should appear singly in the openings of plantations, provided it be well sheltered from cold winds, but it is not in full leaf till the month of June.]

GLINUS. (Γλινός or Γλεινός is the name of a tree in Theophrastus.)

Lin. gen. n. 610. Reich. 666. Schreb. 836.

Loefling. Juss. 316. Gertn. t. 130.

Class. II. 5. Dodecandria Pentagynia.

Nat. order of Caryophyllei.—Ficoideæ Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved; leaflets ovate, concave, coloured within, permanent.

COR. none. Nectaries often five, flat, resembling petals, narrow, shorter than the calyx, unequally bifid or trifid.

STAM. Filaments about fifteen, (fifteen to twenty, G.), subulate, flat, the length of the calyx. Anthers erect, upright, compressed, twin.

PIST. Germ superior, five-cornered. Styles five, short. Stigmas simple. (Style one, five-cleft, G.)

PER. Capsule ovate, five-celled, five-cornered, five-valved.

SEEDS very many, roundish, in a single row under the valves, tubercled, affixed at the base to a small swelling membrane.

OBS. The nectaries of Linneus are by Gertner called the petals.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. none. Nectaries cloven bristles. Caps. five-cornered, five-celled, five-valved, containing numerous seeds.

SPECIES.

1. *Glinus lotoides*. Hairy *Glinus*.

Lin. spec. 663. Reich. 2. 459. Loefl. itin. 145.

Gron. orient. 143. Burm. ind. t. 36. f. 1.

Gertn. fruct. 2. 236.

Alfine lotoides ficula. Bocc. sic. 21. t. 11. Mor. bist. 2. 552.

Portulaca bætica, luteo flore, spuria, aquatica. Barrel. ic. t. 336.

Stem hairy, leaves obovate.

2. *Glinus dictamnoides*.

Lin. syst. 455. mant. 243. Reich. 459. Burm.

ind. 113. Pluk. amaltb. t. 356. f. 6.—conf. t. 12. f. 3.

Stem frutescent prostrate, leaves orbicular tomentose flat, calycine leaflets lanceolate.

3. *Glinus setiflorus*.

Vahl symb. 3. 64. Forsk. descr. 95.

Stem shrubby, leaves obovate plaited, calycine leaflets ovate.

DESCRIPTIONS, &c.

1. Root annual. Capsule ovate-pyramidal, thin, pustuled by the protuberating seeds. Partitions inserted in the middle of the valves. Seeds fixed by means of very long umbilical cords to the central angle of the cells: there are about fifty in each cell, kidney-shaped with a beak, studded with thick, scattered dots, shining and ferruginous: integument double; albumen scarcely any; embryo spiral.

Native of the South of Europe and the Levant. Introduced in 1788, by Monf. Thouin.

2. Native of the East Indies. Stems scarcely the size of packthread, prostrate, diffused, somewhat branched. Branches alternate, both they and the stems tomentose at top, but with hairs less distinct than in the first species. Leaves petioled, two or four together, somewhat sharp at the base, without veins or nerves, with stellate hairs shorter than in *G. lotoides*. Peduncles at the joints, aggregate, short.

3. This has the same habit with the two others. The whole plant is hoary with very close hairs, longer than in the first species. Stem very much and dichotomously branched; branches diffused, jointed, a little thicker at the joints. Leaves two or four at the joints, acute at the base, subretuse. Flowers axillary, several. Peduncles very short. Spinules rigid, minute, from the base of the peduncles, permanent. Capsule as in *G. lotoides*.

Native of Arabia.

GLINUS. See *Aizoon*.

GLOBBA. (The vernacular name of the Malaysians.)

Lin. gen. Reich. n. 45. Schreb. 54. Juss. 63.

Class. 2. 1. Diandria Monogynia.

Nat. order of Scitamineæ. Cannæ Juss.

GENERIC CHARACTER.

CAL. Perianth superior, one-leaved, cylindric, with a trifid mouth, permanent.

COR. monopetalous, cylindric; with a trifid equal mouth.

STAM. Filaments two, filiform, middling in length. Anthers fastened longitudinally to the filaments.

PIST. Germ inferior. Style bristle-shaped, of a middling length. Stigma sharp.

PER. Capsule roundish, three-celled, three-valved.

SEEDS very many.

ESSENTIAL CHARACTER.

Cal. superior, trifid. Cor. equal, trifid. Caps. three-celled. Seeds very many.

SPECIES.

1. *Globba marantina*.

Lin. syst. 72. Reich. 1. 73. mant. 170.

Spike terminating, erect.

2. *Globba nutans*.

Lin. syst. 73. Reich. 74. mant. 170.

G. filvestris. Rumph. amb. 6. 140. t. 62, 63.

Spike terminating pendulous.

3. *Globba uviformis*.

Lin. syst. 73. Reich. 74. mant. 171. Rumph. amb. 6. 138. t. 59. f. 2.

Spike lateral.

4. *Globba japonica*.

Lin. syst. 73. Thunb. jap. 23.

Raceme terminating drooping, leaves sword-shaped entire.

^a Gertner.

^b Hort. kew.

^c Vahl.

DESCRIP-

DESCRIPTIONS, &c.

1. Stem simple herbaceous. Leaves alternate petioled (altogether like those of *Maranta*); the petioles membranaceous and sheathing; the sheaths truncate at the tip. Flowers remote, each involved in an ovate bract, longer than the flower.

This, and the second and third species are natives of the East Indies^d.

2. Rumphius makes two varieties of this, the great and the small. The former has a very straight firm stem, from fourteen to eighteen feet in height, two inches in diameter at bottom, naked for six feet from the root, and stout enough for walking canes; the upper part is soft and is eaten in some places. Leaves three feet long and more than two hands broad, thin, smooth, with many parallel transverse veins, bending upwards near the edge, forming slight ridges on the upper and furrows on the lower surface. The trunk terminates in a jointed stem, three spans in length, with a narrow boat-shaped leaf at each joint, hollowed above, and of a dusky red colour. Fruit the size of a pigeon's egg, red.

The leaves of the smaller sort are more wandering, narrower, and draw more to a point at the base. The primary stem is two or three feet in length, and leafless; producing abundance of oblong flowers, in bunches like the Hyacinth.

3. Stem from seven or eight to twelve or fourteen feet high, the thickness of a finger. Leaves from fourteen to sixteen inches long, and from four to six fingers broad, smooth and dark green above, pale green and lanuginose beneath. The fructification issues from the side of the stem, eighteen inches or two feet above the root, in a spathed bunch or spike a hand in length, containing many white flowers, which are succeeded by fruit resembling grapes, but larger, white, becoming black or of the colour of smoke, and sometimes eaten^e.

4. The stem is sheathed with leaves, simple, round, streaked, smooth, upright, two feet high or more. Leaves few, acuminate, smooth, very finely streaked obliquely, a little longer than the sheathing petioles, very thin except the midrib which is thick, deep green above, paler beneath, a foot long and two inches broad. Flowers many. Rachis flexuose, a hand in length. Peduncles scarcely a line long, nodding a little, one-flowered. Style filiform. Capsule ovate, augmented by the permanent base of the corolla and style, smooth, red, the size of the hip of the wild rose. Seeds surrounded by a white connecting membrane, angular, smooth, brown.

Native of Japan; where the fruit is ripe in december and january^f.

GLOBE-AMARANTH. See *Gomphrena*.

GLOBE-FLOWER. See *Trollius*.

GLOBE-THISTLE. See *Echinops*.]

GLOBULARIA. (So named by Tournefort from the flowers growing many together in form of a little globe or ball.)

Fr. *Globulaire*.

Lin. gen. n. 112. Reich. 118. Schreb. 146.

Tournef. t. 265. Gertn. t. 44. Juss. 97.

Alypum. Niff. in act. gall. 1712. t. 18.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Aggregatæ*.—*Lyfimachiæ* Juss.

GENERIC CHARACTER.

CAL. Common perianth imbricate with scales the length of the disk and equal.—Proper one-leaved, tubular, five-cleft, sharp, permanent. (four or five-toothed; the teeth bristle-shaped and acuminate, G.)

COR. Universal nearly equal.—Proper monopetalous, tubular at the base: border five-parted; upper lip very narrow, two-parted, shorter; lower of three larger, equal segments.

STAM. Filaments four, simple, the length of the corollule. Anthers distinct, incumbent.

PIST. Germ ovate, superior. Style simple, the length of the stamens. Stigma obtuse.

PER. none. Proper calyx converging, inclosing the seed.

^d Linn. mant.

^e Rumphius,

^f Thunberg.

SEEDS solitary, ovate.

REC. Common oblong, separated by chaffs.

ESSENTIAL CHARACTER.

Cal. common (none, or G.) imbricate: proper tubular, inferior. Corollets the upper lip two-parted; lower three-parted. Recept. chaffy.

SPECIES.

- [1. *Globularia longifolia*. Long-leaved *Globularia*.
Ait. hort. kew. 1. 130.
Alypum f. herba terribilis procerior, cortice cinereo scabro, fol. acuminato longiore. Sloan. jam. 1. 19. t. 5. f. 3.
Stem shrubby, all the leaves linear-lanceolate quite entire, heads axillary.]
2. *Globularia Alypum*. Three-tooth-leaved *Globularia*.
Lin. spec. 139. Reich. 1. 272. Allion. pedem. n. 519. D'Affo aragon. n. 104.
Alypum monspeliensium, f. frutex terribilis. Bauh. hist. 1. 598. Niff. mem. acad. par. 1712. 341. t. 18. Park. theat. 198. t. 199. f. 1.
A. montis Ceti, f. herba terribilis Narbonensium. Lob. Raii hist. 1443.
Thymelæa fol. acutis, capitulo succisæ. Bauh. pin. 463.
Stem shrubby, leaves lanceolate three-toothed and entire, heads terminating.]
- [3. *Globularia bisnagarica*.
Lin. spec. 139. Reich. 1. 272. Pluk. alm. 1. 58. f. 5. Mor. hist. 3. 51. (Scabiosa).
Stem shrubby, root-leaves wedge-shaped retuse, stem-leaves lanceolate.]
4. *Globularia vulgaris*. Common *Globularia*, or blue Daisy.
Lin. spec. 139. Reich. 1. 272. fl. suec. n. 116. hort. cliff. 490. Hall. helv. n. 218. Pollich pal. n. 136. Scop. carn. n. 132. Krock. files. n. 199. Gertn. fruct. 211.
Aphyllantes Anguillaræ. Camer. hort. 18. t. 7. Bauh. hist.
Bellis cærulea, caule folioso. Bauh. pin. 262.—
f. *Globularia*. Ger. 511. f. 1. emac. 637. 6, 7. Raii hist. 381.
Scabiosa cær. globosa, caule folioso. Mor. hist. 5. f. 6. t. 15. f. 46.
β. Bellis cærulea apula. Tabern. hist. 2. 709. Ger. 511. 6. f. 2. emac. 637. 6.
γ. B. cær. monspeliaca. Tabern. hist. 2. 709. Lob. adv. 200. ic. 478. Ger. 512. f. emac. 637. 7.
Stem herbaceous; root-leaves three-toothed; stem-leaves lanceolate.
5. *Globularia spinosa*. Prickly-leaved *Globularia*.
Lin. spec. 139. Reich. 1. 273. Tournef. inst. 476.
Bellis cærulea spinosa. Bauh. pin. 262.
B. spinosa fl. globofo. Bauh. prodr. 121. Raii hist. 381.
Root-leaves crenate-prickly; stem-leaves quite entire mucronate.
6. *Globularia cordifolia*. Wedge-leaved *Globularia*.
Lin. spec. 139. Reich. 1. 273. hort. cliff. 491. Hall. helv. n. 216. Scop. carn. n. 133. Jacqu. austr. 3. 26. t. 245. D'Affo aragon. n. 106. Mor. hist. 3. 50. f. 6. t. 15. f. ult. (Scabiosa).
Bellis cær. montana frutescens. Bauh. pin. 262.
Scabiosa minima bellidis folio. Ger. Raii hist. 381.
S. *Globulariæ* Bellidis foliis. Park. theat. 488. 4.
Aphyllanti affinis, Scabiosa 5-Clus. Bellidi affinis. Bauh. hist.
Stem almost naked; leaves wedge-shaped three-cusped, the middle cusp least.
7. *Globularia nudicaulis*. Naked-stalked *Globularia*.
Lin. spec. 140. syst. 143. Reich. 1. 273. Hall. helv. n. 217. Scop. carn. n. 134. Jacqu. austr. 3. 17. t. 230. Mor. t. 15. f. 43. (Scabiosa).
G. pyrenaica, fol. oblongo, caule nudo. Tournef. inst. 467.
Bellis cær. caule nudo. Bauh. pin. 262. Raii hist. 381.—f. *Globularia*. Park. parad. 322. t. 321. f. 9.
Stem naked, leaves quite entire lanceolate.
8. *Globularia*

8. *Globularia orientalis*.

Lin. spec. 140. *Reich.* 1. 273. *Tournef. cor.* 35. Stem almost naked, heads alternate sessile, leaves lanceolate-ovate entire.

DESCRIPTIONS, &c.

[Root perennial. Stem shrubby or herbaceous, simple, usually with one head of flowers at top. Root-leaves often spatulate, emarginate-acuminate; stem-leaves small or scarcely any. *G. Alypum* differs, in having the common calyx turbinate and very imbricate; corolla ligulate three-toothed, stigma bifid; stem becoming shrubby and branched, with the habit of *Protea*^a. The leaves of all the *Globularias* dry black. The corollas are blue.]

1. This rises much higher than the next species, having a hard white wood with a large pith and a scabrous light brown or gray bark; the branches towards their ends very thick set with leaves, without any order; they are two inches long, and a third part of an inch broad in the middle; the nerves yellowish green. Flowers small, blue, in round heads^b.

Native of Madeira. Introduced in 1775, by Sir Joseph Banks, Bart. It flowers in July and August^c.]

2. This has a hard woody stem, about two feet high, with many woody branches, beset with leaves like those of the Myrtle. The flowers are produced on the tops of the branches in a ball, and are of a blue colour.

[Native of the South of Europe. As about Montpellier, and in many parts of Narbonne and Provence. About Valentia, and several other places in Spain. In the county of Nice, and on the sea coast of Uneglia. Also in Barbary. It flowers from August to November. Cultivated in 1739, by Mr. Miller^d.

From the violent purging quality of this shrub, it acquired the name of *Frutex* or *herba terribilis*; and in English *Herb Terrible*: but in the abundance of purging medicines that we possess, this is seldom if ever used.

3. Stem shrubby. Leaves rigid, those next the root rounder and cordate, but the stem-leaves pointed^e.

4. Stem slender, upright, covered with leaves, from an inch and half to six inches in height; and sometimes more, somewhat angular, very simple, smooth, one-flowered. Root-leaves numerous, like those of the Daisy, but thicker, petioled, placed in a ring, ovate, obtuse, quite entire, emarginate, the nerve produced into a small awn or point: stem-leaves alternate, nearer to sessile, smaller, three-toothed, four lines broad, from an inch to an inch and half in length: all smooth and of a bright green. Calyx of each floret hairy, and closed with villose hairs, the whole appearing rough. Corollas of a fine blue. Anthers, and style of the same colour. Germ villose^f.

Scopoli observes that the leaves of the former year are emarginate, with a dagger-point in the middle; but the fresh leaves three-toothed. He adds, that the stamens are shorter than the segments of the upper lip.

Native of many parts of Europe, as Sweden, the South of France, Germany, Switzerland, Austria, Carniola, Hungary, Savoy, Italy, Spain. I gathered it on mont Saleve in flower, in April 1779. It usually flowers in May and June; and was cultivated by Mr. Miller in 1739. Parkinson says it was (1629) very rare in our English gardens.

In Gerarde's time (1597) the blue Daisy, or Globe Daisy, as he calls it, was a stranger in England. Johnson (Ger. emac.) gives only two figures, and adds that one might have served, for they differ but in the tallness of their growth, and in the breadth of their leaves. He says nothing of their being cultivated in our gardens.

It varies with a white flower; and with a leafless stalk.

5. Root-leaves several, small, stiff, notched, and at each notch a prickle. Stem a hand in height, dark green, with oblong, narrow leaves at the base, not notched but ending in prickles. Head of flowers longer than in the foregoing, hairy as in *Sc. Succisa*.

Found by Albinus on the mountains of Granada^g. It flowers in May. Cultivated by Mr. Miller before 1752^h.

6. Root large, woody, producing many tufts of leaves. Leaves gradually widening from the base, emarginate, with the nerve ending in a short awn or spinule. Stem naked, except one little strap, two inches high or little more, terminated by one head of flowers, smaller than in the other sortsⁱ.

Native of Switzerland, Austria, Carniola, Hungary, Piedmont, Aragon. Ray found it at the foot of mont Saleve in Savoy near Geneva. It flowers in June and July. Cultivated in 1759, by Mr. Miller^k.

7. Somewhat larger than the foregoing, both in the leaves and flowers. Leaves firm like those of the Bay. Stem naked, except a few little straps or scales, six inches high^l. Stem a little higher than the leaves. Flowers usually trifid, but sometimes quadrifid^m.

Native of Switzerland, Austria, Carniola, Savoy and Piedmont. Ray observed it near the Grand Chartreux in Dauphiné. It flowers in July. Cultivated in 1739, by Mr. Millerⁿ.

8. Root-leaves very many, obovate, naked, sharp, ending in the petioles. Stem a foot high, herbaceous, quite simple; the leaves on it very small, lanceolate, alternate, remote. There are from seven to ten heads at the top of the stem. Found by Tournefort in the Levant^o. Cultivated by Mr. Miller in 1739.]

PROPAGATION AND CULTURE.

2. This plant may be propagated by cuttings, which should be cut off in April, just before they begin to make new shoots; the cuttings should be planted into pots filled with light fresh earth, and then placed into a very moderate hot-bed, observing to water and shade them until they have taken root, when they may be taken out of the bed, and inured to bear the open air by degrees. In summer these plants may be exposed with other hardy exotic plants, and in winter they should be placed under a hot-bed frame, where they may enjoy the free air in mild weather, but should be screened from hard frost, which will destroy them, if they are exposed thereto, but in mild winters they will live in the open air. This plant never produces good seeds in this country.

4, 5, 6, 7. may be propagated by parting the roots after the manner of Daisies. The best season for parting and transplanting of the plants is in September, that they may take new root before the frosty weather comes on. They should be planted in a shady situation, and require a moist loamy soil, in which they will thrive much better than in a light ground and an open situation; but the plants should not be removed oftener than every other year, if they are required to flower strong.

1, 8. These are somewhat tender, and should be sheltered from the frost in winter, under a frame, but in summer should be exposed with other hardy exotic plants, and will require to be frequently watered in dry weather. This may be propagated by seeds, or by parting their roots, as was directed for the fourth sort.

[GLOBULARIA. See *Protea* and *Saponaria*.

GLOBULARIÆ AFFINIS. See *Eriocaulon*.

GLOCHIDION. See *Bradleya*.]

GLORIOSA. (So named from the magnificent splendour of its flowers.)

Lin. gen. n. 413. *Reich.* 446. *Schreb.* 561. *Gertn. t.* 18. *Methonica*. *Tournef. mem. acad. par.* 1706. *Juss.* 48.

^a Jussieu.^b Sloane.
^c Plumier.^d Hort. kew.
^e Krocken.^f Ibid.^g Bauh. prodr.^h Hort. kew.ⁱ Haller.^k Hort. kew.^l Haller.^m Scopoli.ⁿ Hort. kew.^o Linn. spec.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Sarmentaceæ*.—*Lilia* Juss.

GENERIC CHARACTER.

CAL. none.

COR. *Petals* six, oblong-lanceolate, waved, very long, wholly reflex.

STAM. *Filaments* six, subulate, shorter than the corolla, from straight patulous. *Anthers* incumbent.

PIST. *Germ* globular. *Style* filiform, longer than the stamens, inclined. *Stigma* triple, obtuse.

PER. *Capsule* superior, oval, three-lobed, three-celled, three-valved.

SEEDS several, globular, berried, in two rows.

OBS. *This genus is allied to Erythronium.*

ESSENTIAL CHARACTER.

Cor. six-petalled, waved, reflex. *Style* oblique.

SPECIES.

1. *Gloriosa superba*. *Superb Lily*.

Lin. spec. 437. *Reich.* 2. 49. *mant.* 364. *hort.*

cliff. 121. *fl. zeyl.* n. 122. *Gärtn. fruct.* 69.

Darwin. 2. 13.

Methonica malabarorum. *Herm. lugdb.* t. 689. *Pluk.*

alm. t. 116. f. 3.

Lilium zeylanicum superbum. *Comm. hort.* 1. 69.

t. 35. *Rudb. elyf.* 2. 178. f. 7.

Mendon. *Rheed. mal.* 7. 107. t. 57.

Leaves tendril-bearing.

2. *Gloriosa simplex*,

Lin. syst. 325. *Reich.* 2. 49. *mant.* 62.

G. cærulea. *Mill. dict.* n. 2.

Leaves acuminate.

DESCRIPTIONS, &c.

1. This has a long fleshy root of a whitish colour, and a nauseous bitter taste, from the middle of which arises a round weak stem, requiring support, and with that growing to the height of eight or ten feet. Leaves smooth, about eight inches long, and one inch and a half broad at the base, growing narrower till within two inches of the end, which runs out in a narrow point, and ends in a tendril. Flowers at the upper part of the stem, from the side, on slender peduncles, hanging down, at first of an herbaceous colour, but changing to a beautiful flame-colour.

[Stem a fathom in height, round, with two opposite, lateral branches; above these it puts forth a peduncle from each axil. Leaves alternate, but under the branches in threes*.

Capsule turbinate, the outer coat leathery and opaque: valves rounded at the back, marked with a depressed longitudinal line, smooth; within streaked with transverse parallel lines, shining like silk, bay-yellow, gaping by the inner suture. The partitions are formed from the edges of the valves bent in; they are folded, and united at the axis of the fruit. Seeds as far as twelve in each cell, acuminate towards the navel, scarlet. Parts of the embryo folded together^b.

This fine plant is native of Guinea, as well as the East Indies; and was introduced here in 1690, by Mr. Bentick^c.]

It flowers in June and July, but seldom perfects seeds in this country. The stalks decay in autumn, the roots remain inactive all the winter, and new stalks come out in March. The roots and every part of the plant are poisonous.

2. Stem climbing. Leaves smooth, about three inches long and two broad, ending in acute points, but having no tendril. The stalks as yet have not grown more than two feet high, but have the appearance of climbing. The leaves have a strong disagreeable scent on being handled. It is said to have a blue flower. The seeds were sent to Mr. Miller by Mons. Richard, gardener to the French King at Trianon, and were brought from Senegal by Mons. Adanson.

[This plant has not appeared in any of the gardens either in France or England, nor was there any specimen of it in Mr. Miller's herbarium; it is doubtful therefore what it might have been.]

* *Linn. mant.*

^b *Gärtner.*

^c *Hort. kew.*

PROPAGATION AND CULTURE.

As these plants rarely produce seeds in this country, they are generally propagated by their roots; those of the first sort creep and multiply pretty fast, but the second has not as yet put out any offsets; but as the plants are young, we cannot as yet say how they may increase when they are of a proper age. These roots may be taken out of the ground when their stalks are decayed, and preserved in sand during the winter season, but they must be kept in the stove, or a warm room, where they can receive no injury from the cold; and in the spring they must be planted in pots filled with light earth, and plunged into the tan-bed in the stove; but others chuse to let the roots continue in the ground all the winter, keeping the pots always in the tan-bed; where this is practised, the roots should have very little water in the winter; for as they are then in an inactive state, moisture at that time frequently rots the roots.

Toward the latter end of March, or the beginning of April, their stalks will appear, when there should be some tall sticks put down by them to support them, otherwise they will trail over the neighbouring plants, and the first sort will fasten to the plants by the tendrils. The stalks of this sort will rise ten or twelve feet high, if the roots are strong, and some of them will produce two or three flowers; these make a fine appearance in the stove, during their continuance, which is seldom more than ten days or a fortnight. In summer, when the plants are growing, they will require frequently to be watered, but they must not have it in too large quantities, for they are very subject to rot with much wet at any season. Those roots which are not taken out of the pots in winter, should be transplanted and parted the beginning of March, before they put out new fibres, or stalks, for they must not be removed when they are in a growing state; the pots should not be too large; for unless they are confined, they will not put out strong stalks; the largest roots may be planted in twopenny pots, but the small ones will require only pots of about five or six inches over at the top.

[GLOSSOMA. (From *Γλωσσα*, the tongue.)

Lin. gen. Schreb. n. 1728.—*Votomita*. *Aubl.* 35. *Juss.* 382.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Rhamni*. *Jussieu*.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, turbinate, four-toothed, superior, permanent.

COR. *Petals* four, lanceolate, acute, bowed back. *Nectary* a rim round the base of the style.

STAM. *Filaments* four, very short. *Anthers* oblong, almost united into a cylinder, prolonged at the tip into a membranaceous strap or scale, gaping on the inside.

PIST. *Germ* inferior. *Style* filiform, the length of the stamens. *Stigmas* four, acute.

PER. *Drupe* spear-shaped, one-celled, crowned with the calyx.

SEED single, ovate, streaked.

ESSENTIAL CHARACTER.

Cal. turbinate four-toothed, superior. Cor. four-petalled. Anth. almost united, with a membranaceous scale at the end. Stigmas four. Drupe.

SPECIES.

Glossoma guianensis.

Votomita guianensis. *Aubl. guian.* 91. t. 35.

DESCRIPTION, &c.

This is a middle-sized shrub, five or six feet high, the bark brown, the wood yellow, hard and compact; branches jointed, four-cornered. Leaves opposite, cruciate, six inches and a half long, and two and a half wide, entire, smooth, thick, elliptic, acuminate, on very short petioles. Stipules short, acute, at the base of the petioles, deciduous. Peduncles axillary, bearing two, three, or four flowers, each on its proper pedicel, bracted at the base. Corolla white.

Native of Guiana, and flowering in September^d.

Votomita is the vernacular name.

GLOSSOPETALUM. (*Tongue-petalled: each petal having a strap or tongue at the end.*)

Lin. gen. Schreb. n. 526. — Goupia. Aubl. t. 116. Juss. 378.

Class. 5. 5. Pentandria Pentagynia.

Nat. order of *Rhamni*. Jussieu.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, very small, five-toothed, permanent.

COR. *Petals* five, lanceolate, spreading, acute; at the tip of each a linear-lanceolate, truncate, strap, nearly the length of the petal, and lying on it.

STAM. *Filaments* five, very short. *Anthers* roundish.

PIST. *Germ* roundish, surrounded by a gland, bearing the petals and stamens. *Style* none. *Stigmas* five, acute.

PER. *Berry* roundish, five-grooved, one-celled.

SEEDS five, angular.

ESSENTIAL CHARACTER.

Cal. very small, five-toothed. *Pet.* five, with a strap at the tip of each. *Berry.*

SPECIES.

1. *Glossopetalum glabrum.*

Goupia glabra. Aubl. guian. 296. t. 116.

Leaves smooth.

2. *Glossopetalum hirsutum.*

Goupia hirsuta. Aubl. guian. 296.

Leaves hairy.

DESCRIPTIONS, &c.

1. This is a tree, the trunk of which rises to the height of sixty feet and more, and is from two to three feet in diameter. The bark is smooth and gray; the wood white and of a loose texture. Leaves alternate, smooth, shining, firm, entire, ovate-lanceolate, ending in a long point. The midrib divides them unequally. The petiole is short, and has two small, narrow, deciduous stipules at the base. Peduncles solitary, axillary, two inches long, bearing many flowers in a spherical head. Corolla yellow. Berry black.

Native of Guiana, flowering in November. The natives make canoes of the trunk.

2. The trunk of this species is only from twenty to twenty-five feet in height. The bark is wrinkled, blackish marked with white. The leaves are covered with short hairs on both sides. These are used against inflammations in the eyes; they are bitter, as is also the bark.

Native of Guiana and Cayenne^e.

Goupi is the vernacular name.

GLOXINIA. (*So named by L'Heritier, in memory of Benjam. Petr. Gloxin of Colmar, author of Observations Botanicae, Argent. 1785. 4°.*)

L'Herit. fl. nov. 149. Ait. hort. kew. 2. 331.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatae*. *Campanulaceae*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* superior, five-leaved: *leaflets* equal, lanceolate, serrulate at the tip, the three upper ones nerved, the two lower bent down with the nectary; permanent.

COR. monopetalous, irregularly campanulate; *tube* scarcely any; *border* oblique, five-cleft, segments roundish, the four upper spreading and entire, the lowest straight, concave, toothed.

STAM. *Filaments* four, with the rudiment of a fifth, two scarcely shorter, inserted into the receptacle, fastened to the lower margin of the corolla, sickled, pubescent, converging laterally above. *Anthers* ovate, two-celled, peltate, united, within the opening of the corolla.

PIST. *Germ* inferior, turbinate, striated. *Style* filiform, the length of the stamens. *Stigma* capitate, the length of the anthers.

PER. *Capsule* one-celled (or half-celled). *Receptacles* two, opposite, two-parted, fastened to the sides of the capsule by the partition.

SEEDS very numerous, inserted into the receptacles.

^d Aublet.

^e Ibid.

OBS. *Distinct from Martynia by its inferior germ, &c. From Gefneria by its bell-shaped corolla, with the upper segment bent back. From Cyrilla by its bell-shaped corolla, without the tricallous mouth. L'Herit.*

ESSENTIAL CHARACTER.

Cal. superior, five-leaved. *Cor.* bell-shaped, with the border oblique. *Filaments* with the rudiment of a fifth, inserted into the receptacle.

SPECIES.

1. *Gloxinia maculata.* *Spotted Gloxinia.*

L'Herit. fl. nov. 149. Ait. hort. kew. 2. 331.]

Martynia perennis. Lin. spec. 862. Reich. 3. 142.

hort. cliff. 322. t. 18. Mill. dict. n. 2. Ekret.

piet. t. 9. f. 2. Medic. bot. Beob. 1783. p. 238.

Glox. obs. bot. 13.

DESCRIPTION, &c.

Root perennial, thick, fleshy, divided into knots, which are scaly, somewhat like those of Toothwort. Stems several, about a foot high, thick, succulent, purplish. Leaves oblong, thick, sessile, serrate, rough on their upper side, where they are of a dark green, but their under side is purplish. Stem terminated by a short spike of blue flowers: [or rather an erect raceme, leafy or bracted; in which the flowers are axillary, solitary, peduncled, bright blue, and sweet-scented. Calyx coloured at the tips of the leaflets underneath. Corolla hirsute on the outside, inserted into the receptacle, larger than the calyx: the base is gibbous in front, very large, meliferous within and dark purple^f.

Native of South America,] where it was discovered about Carthage by Mr. Robert Millar, who sent the seeds to Europe. [Mr. Philip Miller cultivated it in 1739^g.]

PROPAGATION AND CULTURE.

This plant must be constantly preserved in the stove, and plunged into the bark-bed. During the winter season much water will rot the roots. In the middle of March, just before it begins to shoot, the roots may be parted, and transplanted into middle-sized pots, filled with rich light earth, and plunged into the bark-bed, which should then be renewed with fresh tan. When the plants come up, they must be frequently refreshed with water in small quantities, and as the season becomes warmer a large share of fresh air should be admitted. They should not be placed where they are over-hung or shaded by other plants; nor should they be shifted or transplanted when they are in leaf, for that will prevent their flowering. Since this plant increases very fast by the roots, there is no necessity for using other methods to propagate it; otherwise the shoots of the young stalks will take root, if they are planted in pots filled with light earth, and plunged into a hot-bed, during any of the summer months.

[GLUTA.

Lin. gen. Reich. n. 1109. Schreb. 368. Juss. 427.

Class. 5. 1. Pentandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, very thinly membranaceous, bell-shaped, obtuse, shorter than the germ, deciduous.

COR. *Petals* five, lanceolate, longer than the calyx, spreading at top, but below as far as the middle glued to the column of the germ.

STAM. *Filaments* five, bristle-shaped, of a middling length, inserted into the tip of the column. *Anthers* versatile, roundish.

PIST. *Germ* obovate, fitting on an oblong column. *Style* filiform, of a middling length. *Stigma* simple.

PER.

SEED

OBS. *If the petals be separated from the column of the germ, the situation of the stamens will be as in Passiflora.*

ESSENTIAL CHARACTER.

Cal. bell-shaped, deciduous. *Pet.* five, glued at bottom to the column of the germ. *Filam.* in-

^f L'Heritier.

^g Hort. kew.

serted into the tip of the column. Germ fitting on an oblong column.

SPECIES.

1. Gluta Benghas.

Lin. syst. 821. Reich. 4. 46. mant. 293.

DESCRIPTION, &c.

A tree, with branches leafy at the end. Leaves alternate, sessile, broad lanceolate, about a foot in length, veined, naked; on the flowering branches only a hand long, more obtuse and crowded. Panicle terminating, peduncled, with flowers the size of those of Cabbage.—Fructification singular: and if we were to suppose the petals to be separated from the column, the situation of the stamens would be as in Passiflora.—Native of Java^b.

Compare it with *Helicteres*, *Sterculia*, &c. and observe whether the fruit be one-celled, as in *Passiflora*, or many-celled as in *Helicteres*, &c.¹

GLYCINE. (From γλυκὺς, sweet.)

Lin. gen. n. 868. Reich. 942. Schreb. 1182.

Juss. 357. Gertn. t. 154. Apios. Boerb.

Class. 17. 4. Diadelphia Decandria.

Nat. order of Papilionaceæ, or Leguminosæ.

GENERIC CHARACTER.

CAL. Perianth one-leaved, compressed; mouth two-lipped: upper lip emarginate, obtuse; lower longer, trifid, acute; the middle tooth more produced.

COR. papilionaceous. Banner obcordate, the sides bent down, the back gibbous, the tip emarginate, straight, repelled from the keel. Wings oblong, towards the tip ovate, small, bent downwards. Keel linear, sickle-shaped, bent upwards, at the tip pressing the banner upwards; obtuse, towards the tip broader.

STAM. Filaments diadelphous (simple and nine-cleft) only a little divided at the tip, rolled back. Anthers simple.

PIST. Germ oblong. Style cylindric, rolled back in a spiral. Stigma obtuse.

PER. Legume oblong.

SEEDS kidney-form.

Obs. *G. Apios* & *frutescens* have two-celled legumes. *G. monoica* is singular in this family.—This is a difficult genus, and being made up of heterogeneous species, it requires farther consideration. *G.*

ESSENTIAL CHARACTER.

Cal. two-lipped. Cor. the keel turning back the banner at the tip.

SPECIES.

[1. *Glycine subterranea*.

Lin. spec. 1023. syst. 659. Reich. 3. 452. dec. 37. t. 19. Lour. cochinch. 457.

Arachis africana. Burm. prodr. 22.

Arachidna phaseloides americana. Herm. prodr. 314.

Phaseloides mariana procumbens, angustiori folio, triphyllous, fl. gemello. Raii suppl. 437.

Mandubi de Angola. Marcgr. bras. 43. Raii hist. 919. 4.

Leaves ternate radical, stalks procumbent flexuose, peduncles two-flowered.

2. *Glycine monoica*. Pale-flowered *Glycine*.

Lin. spec. 1023. syst. 659. Reich. 452.

G. bracteata. Lin. spec. edit. 1. 754. Gron. virg. 2. 107.

G. fol. tern. pedicellis bracteatis. Gron. virg. 1. 173.

Phaseolus supra & infra terram fructus gerens. Boerb. lugdb. 2. 28. n. 18.

Leaves ternate almost naked, stalks hairy, racemes pendulous, fruit-bearing flowers apetalous.

3. *Glycine debilis*. Hairy *Glycine*.

Ait. hort. kew. 3. 34.

Leaves ternate, leaflets oval hairy underneath; legumes subsolitary linear many-seeded: style permanent upright.

4. *Glycine caribæa*. Trailing *Glycine*.

Ait. hort. kew. 3. 34. Jacq. ic. 1. t. 146. col. lect. 1. 66.

Leaves ternate subvillose, leaflets rhomb-shaped; racemes patulous; legumes hirsute; stalk shrubby twining.

^b Linn. mant.

¹ Jussieu:

5. *Glycine triloba*. Three-lobed *Glycine*.

Lin. syst. 659. Reich. 453. mant. 516. Burm. ind. 162. t. 50. f. 1.

Phaseolus trilobatus. Schreb. in nov. att. A. N. C. tom. 4. 132. fig.

P. aconitifolius. Jacq. obs. 3. p. 2. t. 52.

P. maderaspatanus, &c. Pluk. alm. t. 120. f. 2.

Dolichos trilobatus. Lin. mant. 101.

Leaves ternate, leaflets lobed; stalk prostrate; peduncles two-flowered.

6. *Glycine villosa*. Villose *Glycine*.

Lin. syst. 659. Thunb. jap. 283.

Leaves ternate three-lobed villose; racemes axillary.

7. *Glycine javanica*. Java *Glycine*.

Lin. spec. 1024. Reich. 453. Thunb. in Linn. transf. 2. 340.

Leaves ternate; stalk villose; petioles rough-haired; bractes lanceolate minute.]

8. *Glycine comosa*.

Lin. spec. 1024. syst. 659. Reich. 453. Gron. virg. 85-107.

Phaseolus marianus scandens, flor. comosis. Petiv. mus. 453.

Leaves ternate hirsute; racemes lateral.

[9. *Glycine phaseoloides*.

Swartz prodr. 105. Brown. jam. 296. 2. Plum. cat. 12. (*Phaseolus*).

Leaves ternate villose underneath, racemes terminating.]

10. *Glycine tomentosa*. Downy *Glycine*.

Lin. spec. 1024. syst. 659. Reich. 454. Gron. virg. 81-106. Dill. elth. 30. t. 26. f. 29.

(*Anonis*).

β. *Dolichos pubescens*. Lin. spec. 1021. Jacq. hort. 2. t. 101.

Leaves ternate tomentose; racemes very short, axillary; legumes two-seeded.

[11. *Glycine reticulata*. Netted-leaved *Glycine*.

Swartz prodr. 105. Ait. hort. kew. 3. 35. Vahl symb. 3. 88.

Leaves ternate oblong-lanceolate pubescent the veins like net-work underneath; racemes axillary subsessile; legumes oblong compressed.

12. *Glycine bituminosa*. Clammy *Glycine*.

Lin. spec. 1024. Reich. 454. Gertn. fruct. 2. 343.

Herm. lugdb. 492. t. 493. (*Phaseolus*).

Leaves ternate; flowers racemed; legumes tumid villose.

13. *Glycine Nummularia*.

Lin. syst. 660. Reich. 454. mant. 571.

Leaves ternate very obtuse; racemes with flowers in pairs; legumes sessile suborbiculate compressed.

14. *Glycine labialis*. Labiate *Glycine*.

Lin. syst. 660. suppl. 325.

Twining; leaves ternate, obovate, somewhat hoary; flowers axillary heaped, corolla somewhat two-lipped.

15. *Glycine striata*.

Lin. syst. 660. suppl. 326. Jacq. hort. 1. 32. t. 76.

Twining; leaves ternate oblong very softly hoary; racemes axillary the length of the leaves; legumes extremely hirsute.

16. *Glycine rosea*.

Forst. fl. austr. n. 271.

Twining; leaves ternate, leaflets cordate-ovate acute quite entire, peduncles three-flowered; legumes compressed keeled one-seeded.

17. *Glycine lucida*. Shining *Glycine*.

Forst. fl. austr. n. 272.

Twining; leaves ternate, leaflets ovate acuminate quite entire; racemes terminating glandular, pedicels in threes; legumes inflated containing two seeds.

18. *Glycine suaveolens*. Sweet-smelling *Glycine*.

Lin. syst. 660. suppl. 326.

Shrubby, upright, hoary; leaves ternate ovate, acute; flowers axillary, solitary; legumes containing two seeds.]

19. *Glycine Apios*. Tuberous-rooted *Glycine*.

Lin. spec. 1025. syst. 660. Reich. 455. hort. upf. 227. cliff. 365. Gron. virg. 107. Mor. hist. 2.

105. f. 2. t. 9. f. 1. (*Astragalus*).

- Apios americana*. Corn. canad. 200. t. 201. Stiff.
bot. t. 29. Raii hist. 937.
Terræ glandes americanæ f. virginianæ. Park.
theat. 1062. f. 6.
Leaves unequally pinnate, ovate-lanceolate, with seven
leaflets.
20. *Glycine frutescens*. Shrubby *Glycine*, or Carolina
kidney-bean-tree.
Lin. spec. 1025. syst. 660. Reich. 455. hort. cliff.
361. Hort. angl. t. 55.
Leaves unequally pinnate; stalk perennial.
21. *Glycine monophylla*. Simple-leaved *Glycine*.
Lin. syst. 660. Reich. 455. mant. 101. Pluk.
amalth. t. 454. f. 8. (Lens).
Crotalaria Afarina. Berg. cap. 194.
Leaves simple, cordate; stalk pubescent, three-cor-
nered.
- [22. *Glycine picta*.
Vahl symb. 2. 81. Aubl. guian. 766. t. 306.
(Cytisus).
Leaves ternate, lanceolate, villose, racemes axillary,
peduncled, stem erect, shrubby.
23. *Glycine bimaculata*.
Curt. magaz. 263.
Stem twining, smooth and even, leaves simple, cordate-
oblong, racemes many-flowered.
24. *Glycine rubicunda*.
Curt. magaz. 268.
Stem perennial, twining, leaves ternate; leaflets sub-
oval, quite entire, peduncles subtriflorous.
25. *Glycine coccinea*.
Curt. magaz. 270.
Leaves ternate, leaflets roundish, waved.

DESCRIPTIONS, &c.

The *Glycines* are mostly perennial * herbaceous plants, with twining stems, sometimes shrubby at the base; in the two first species creeping, and ripening their fruit under ground. In the nineteenth and twentieth species the leaves are unequally pinnate; in the last they are simple; in all the rest ternate: the leaflets of all as in *Dolichos articulata*, with their petioles in like manner awned, or glandular: the stipules distinct from the petiole: the peduncles axillary, with one or two flowers, or else with many flowers in racemes, frequently having a pair of bractes. If the legume be bilocular in the two species which have bipinnate leaves, they are perhaps of a distinct genus, or might with more propriety be associated with the *Astragali*. It may be doubted whether the flowers of *G. monoica* be really sexually distinct, or rather hermaphrodite, as in other leguminous plants that ripen their fruit under ground. It is also a doubt whether *G. monophylla*, the only species with simple leaves, belongs to this genus^k.

Two of the species come from the Cape of Good Hope; five from the islands in the South Seas. The rest are natives of the East and West-Indies, Virginia and Carolina. Europe produces none of them.

1. Root annual. Stalks several, a span in length, very rigid, close to the ground, or descending to it, round, hairy, unbranched. Leaves alternate, upright, petioled; leaflets spreading, petioled, oblong, quite entire, emarginate, smooth, veined, flat, nearly equal: petioles linear, three-sided, streaked, very long, swelling at their insertion, very smooth, upright; petiolules very short, round, hirsute, bowed in. Stipules two, lateral, permanent, very shortly peltate, ovate, quite entire, very small, hairy, flat: partial stipules to each lateral leaflet, solitary; to the middle one two, oblong, smooth, sessile, upright, concave. Peduncles axillary, solitary, drooping, filiform, hairy, as long as the internodes of the stalk, ending in a globular smooth callosity, below which are the pedicels, opposite, half the size of the peduncle; round, smooth, reflex, rigid. Flowers upright, the size of those in *Ervum tetraspermum*.

* The first is annual, and the third biennial. The fifth is said to be annual, and perhaps another or two may be so.

^k Jussieu.

Calyx four-cleft; the segments lanceolate, sharp, straight, the uppermost larger than the rest, and emarginate: it is smooth, green, and shorter than the tube of the corolla. Corolla pale yellow: banner obovate, streaked, upright: wings very blunt, as long as the banner, spread out: keel as long as the wings, blunt. Germ linear, smooth, green: style hirsute on the upper side. Legume lens-shaped, smooth; containing one round seed.—As soon as it is out of flower the peduncle perforates the earth as in *Trifolium subterraneum*, and *Arachis hypogæa*, and the seeds ripen under ground. It is a native of Brasil and Surinam, whence it was brought in the year 1762, by Dahlberg, and flowered in the bark stove, in the botanic garden at Upsala, but did not ripen its seed there^a.

It is common on the eastern coast of Africa, the seeds which were brought thence by Loureiro, grew, bore flowers and fruit for two years in Portugal, but the third year did not produce any seed^b.

In Surinam it is called *Gobbe Gobbe*, and is planted there in a sandy soil with the addition of a little clay. It bears abundance of fruit, which is a welcome repast to the inhabitants, boiled whilst yet unripe like peas^c.

2. Stalk gray, with reversed hairs. Stipules ovate, upright. Racemes many-flowered. Flowers like those of *Vicia Cracca*, with the banner pale violet, the wings and keel white; they have stamens and pistils, but the former being effete, they bear no fruit; the lower peduncles are longer, hanging down, and one-flowered; this flower has the rudiment of a calyx and pistil, but no corolla; it bears a legume containing one or two seeds. Here, therefore, the laws of fructification are the same as in *Viola mirabilis*^d.—This also perfects the fruit underground, like *Lathyrus subterraneus*^e.—Native of North-America, and Japan. It flowers here in september. Introduced in 1781, by Mr. William Curtis^f.

3. Root biennial.—Native of the East-Indies; where it was found by John Gerard Koenig, M.D.—Introduced in 1778, by Sir Joseph Banks, Bart. It flowers in june and july^g.

4. Stems ash-coloured, the thickness of a quill, smooth: the younger branches green and herbaceous. Leaves petioled; leaflets acute. Stipules to the common petioles awl-shaped, short, ferruginous. Younger branches and leaves somewhat rugged to the touch from hairs not visible to the naked eye. Racemes axillary, lateral, slender, elongated, many-flowered. Corolla yellow, the banner variegated underneath with purple lines. Legume an inch long^h.

Native of the West-Indies. It was cultivated before 1742, by Robert James Lord Petre: and flowers in september and octoberⁱ.

5. The whole plant is prostrate, and does not climb. The root is annual. The flowers are yellow, small, and generally two together. Legumes cylindric.—Native of the East-Indies^k. It is probably a *Phaseolus*.

6. Stem filiform, angular, twining, flexuose, tomentose, as is also the whole plant. Leaves petioled: all the leaflets, especially the middle one, three-lobed, sharp, nerved, half an inch in length; the middle one larger, and on a longer petiole. Raceme peduncled, with two, four or five flowers; in which it differs from *G. tomentosa*. Native of Japan^l.

7. Stem twining, as in *Phaseolus*, with yellow, reflex hairs scattered over it. Leaves of *Phaseolus*. Pedicels yellow, with close hairs. Stipules, to the petioles oval-oblong, to the peduncles lanceolate. Peduncles the length of the leaves, terminated by an ovate-oblong, close spike of nodding violet-coloured flowers, with very minute bractes between them.—Native of the East-Indies^m; and near Naga-

^a Linn. dec.

^d Linn. spec.

^e Ibid.

^k Linn. mant.

^b Loureiro.

^c Linn. syst.

^h Jacquin.

^l Thunberg.

^f Linn. dec.

^g Hort. kew.

ⁱ Hort. kew.

^m Linn. spec.

faki in Japan, where it is called *Fajo Mame*, and flowers in september and october^a.]

8. This rises from two to three feet high, with slender herbaceous stalks. Leaves sessile; leaflets oval-lanceolate, ending in acute points. Flowers axillary, lateral; the naked part of the peduncle is about two inches long; the spike is about the same length, and recurved. Corollas small, of a fine blue colour. [Seeds with purple spots^c. Native of Virginia, in moist shady places. It flowers here in june, and is sometimes succeeded by seeds, which ripen in august.

9. Stem twining to a considerable height, and bearing many flowers towards the top. The legumes have two seeds, and are contracted in the middle^p. Native of Jamaica and Domingo.

10. Root perennial. Stalks twining, from a foot and half to four feet in height, three-cornered, hairy. A single leaf comes out at each joint, on a foot-stalk: leaflets roundish, wrinkled, set with slender hairs, the under surface paler; the middle leaflet somewhat wider than the lateral ones. From the bosom of the leaves three or four small flowers come out, on very short peduncles, of a pale yellow colour; the banner broadish, the wings narrow, and the keel compressed (shorter, and not wreathed or spiral, as in *Phaseolus*). Calyx four-cleft almost to the base; the upper segment broader than the rest, and bifid: this part is smooth, all the rest of the plant is hirsute. Legumes the form and size of the Lentil, brown when ripe, somewhat hirsute, containing two seeds, smaller than Lentils, and more swelling, brownish, and marked with paler spots. Native of Virginia, where it is called *Mountain Pea*. It flowers from june to september, and ripens the early flowers in autumn.

β. *Dolichos pubescens* of Linneus's species is probably only a variety of this species, the banner not being bent back. The stature of this variety is that of *Phaseolus vulgaris*, but the whole plant is softer and pubescent. The leaflets are almost naked on the upper surface; the middle one inclining to rhomb-shaped, the side ones gibbous without, and lanceolate within. Flowers three together, sessile, yellowish white, with a brown spot on the banner. Legumes oblong, pubescent, a little bowed back^a.

11. Stem twining, angular, softly villose, subcaulescent. Leaves petioled: leaflets also petioled, the middle one an inch and half long, the side ones a little smaller, all three acute, villose on both sides, soft, somewhat wrinkled, netted, and paler underneath. Petioles tomentose. Stipules ovate. Racemes axillary, solitary, longer than the leaves. Pedicels solitary, distant. Bractes ovate, attenuated, deciduous. Calyxes five-cleft, the clefts linear-lanceolate, attenuated. Legume sharp at both ends, pubescent especially on the edges, brown. Seeds two^a.

Native of Jamaica. Found there by Swartz.—Introduced here in 1779, by John Fothergill, M.D.^a

12. Stem twining, obtuse-angled, pubescent. Leaflets ovate, smooth, only somewhat pubescent underneath. Stipules ovate, acuminate, nerved. Racemes axillary, longer than the leaf, pubescent. Corollas yellow, streaked, on the outside and at the tip of the keel violet-coloured, extremely obtuse as in *Hedysarum*. Stamens really diadelphous, not as in *Ononis*. Legumes rough with hairs^c, blown up, like those of *Crotalaria*. Seeds four, small, globular, a little flattened, black^a.—Native of the Cape of Good Hope. Introduced in 1774, by Mr. Francis Masson. It flowers from april to september^a.

13. Stem herbaceous, twining, angular, pubescent. Leaves alternate, remote, subpubescent: leaflets wedge-orbicular, equal, broader than long, the lateral ones sessile. Petioles the length of the leaves.

Stipules ovate, deciduous. Peduncles axillary, solitary, filiform, longer than the leaves, standing out, undivided. Flowers in three pairs, very remote, sessile, reflex, small. Legumes the size of the white Lupin seed, very much flattened, mucronate by means of the permanent style; containing only one seed. Native of the East-Indies^a.

14. Stalk twining, the thickness of a thread. Leaves petioled: leaflets obtuse, equal, scarcely tomentose underneath. Stipules none. Peduncles very short. Calyx tubular, five-toothed, the teeth nearly equal. Corolla white, the same size as in the Lentil: banner almost upright, whitish; wings bent down to the lip, the inner side turned outwards and flesh-coloured; keel roundish, short, consisting of two petals, cohering only at the tip, hence it is a labiate flower. Anthers yellow, few of them perfect. Style short. Legume linear, compressed, as it were jointed; with a dagger-point which is upright with respect to the upper suture, and rigid. Seeds seven to nine, roundish, compressed, yellow. Native of the East-Indies^a.

15. Stems woody, round, hirsute. Leaflets ovate, obtuse, with a little terminating bristle, quite entire, covered with very short close hairs, and hence soft, ciliate, and somewhat hoary on the back; the inner division of the side-leaflets is a little narrower than the outer. Petioles hirsute, round, not grooved or angular. All the stipules linear and acuminate. A solitary and hirsute raceme proceeds from the axils of the leaves, and is frequently accompanied by a new branchlet. It has from six to thirty flowers, by pairs or in threes at short intervals, on their proper pedicels. Calyx hairy, one third shorter than the petals, the tube bell-shaped and very short, the limb four-cleft, the clefts lanceolate and acuminate, the lowest a little longer, the uppermost broader, not emarginate. Banner of the corolla striated, purple, green at the base, without any calluses: wings erect, narrower and shorter than the keel, purple: keel almost without colour, the length of the banner, cloven at the back almost to the top, emarginate in front at the tip. Germ hairy, linear, compressed: style of the same length, and in the same situation with the stamens, ending at top in a blunt, dusky, simple stigma, not bearded. Legume compressed, acuminate, brown, very hairy, one or two inches long, straight, or a little incurved. Seeds several, shining, brown variegated. Native of South America. It flowered in the Vienna garden in 1770^a.

16, 17. Natives of the Society isles^b.

18. A shrub, the whole of which is hoary, clammy and sweet. Leaves petioled. Stipules subulate. Peduncles upright, filiform, jointed and bracted in the middle, one-flowered. Bractes in pairs, subulate, caducous. Flowers drooping. Calyx bell-shaped, divided into four subulate segments; the uppermost of which is cloven. Banner of the corolla orbiculate, upright, yellow, above the claw with blood-red streaks: keel as in *Indigofera*. Stigma flat. Legume compressed, linear, short, almost rhomb-shaped, hoary, with a transverse groove. Seeds black, smooth, with a callous, whitish heart.—Found by Koenig among rocks near Madras, in the East-Indies^c.]

19. This has tuberous roots, from which come out in the spring slender twining stalks, which rise to the height of eight or ten feet. Leaves composed of three pairs of leaflets, terminated by an odd one. The flowers come out in short spikes from the side of the stalks. They have little scent, appear in august, but do not produce seeds in England.

[The genus of this is doubtful, perhaps it may be nearer to the *Astragali*, but the corolla is different, especially in the linear keel much sickle-shaped: colour dark purple^d, dusky flesh-colour, or rather fuliginous^e, or a fullen bluish-colour^f.

^a Thunberg.

^b Linn. syst. & spec.

^c Linn. spec.

^d Linn. syst.

^e Vahl.

^f Gartner.

^g Browne.

^h Hort. kew.

ⁱ Hort. kew.

^j Linn. mant.

^k Forster.

^l Linn. suppl.

^m Linn. suppl.

ⁿ Morison.

^o Jacquin.

^p Linn. spec. & syst.

^q Parkinson.

Cultivated here in 1640^z. Parkinson calls it *Virginia Earth-nuts*.]

20. This has woody stalks, which twist themselves together, and also twine round any trees that grow near, and will rise to the height of fifteen feet or more. The leaves are in shape somewhat like those of the Ash-tree, but have a greater number of leaflets. The flowers are produced in clusters from the axils, and are of a purple colour. They are succeeded by long cylindrical legumes, shaped like those of the scarlet Kidney-bean, containing several seeds, which are never perfected in England.

[Legume, in this and the foregoing species, two-celled^a. It flowers from June to September. Introduced in 1724, by Mr. Mark Catesby¹.

21. Stalks two feet high, branched, the thickness of a thread, prostrate and decumbent, hairy. Stipules in pairs. Leaves quite entire, simple, somewhat pubescent on both sides, three times as long as the petioles, with a weak point at the tip. Peduncles axillary, solitary, one-flowered, capillary, longer than the petioles. Involucre tender, subtrifid. Corolla violet-coloured. Germ villose. Keel of the corolla obtuse, as in *Hedysarum*^k. Linneus observes that his plant differs in having an upright stalk, and narrower leaves. Native of the Cape of Good Hope.—It flowers in August. Introduced in 1787, by Mr. Francis Masson¹.

22. This is an upright, branched shrub. Branches angular, striated, subtomentose with purplish hairs. Leaves remote, petioled; leaflets also petioled, from two to three inches long, lanceolate, attenuated, mucronate, villose on both sides, soft, the upper surface marked with lines, the lower whiter, netted-veined, the veins purplish-tomentose. Petiole very short. Stipule opposite to the leaf, sub-bifid; the segments awl-shaped. Peduncles axillary, solitary, half the length of the leaves, tomentose; having at the base a pair of alternate, approximating, ovate bractes. Pedicels short. Flowers spreading, approximating. Calyx hoary, two-lipped^m.

Found in Guiana by Aublet, and in the island of Trinidad by von Rohr.

Vahl doubts whether it be really distinct from *G. reticulata* of Swartz (n. 11); from which however it is certainly very different. Perhaps it does not belong to this genus.

23. This rises up with a twining shrubby stalk to the height of six or eight feet and more; multiplying greatly by age it becomes loaded with a profusion of purple flowers growing in racemes; the richness of the corolla is enlivened by two green spots at the base of the banner. For the most part the flowers go off here without producing any seed-vessels; perfect seeds, however, have been produced, and a plant has flowered from them in the garden of John Ord, Esq. at Walham-Green. It begins to flower in February, and continues during the summer. In the nurseries about town it is known by the name of *G. virens*, the name originally given to this plant by Dr. Solander. The characters do not appear to be peculiarly expressive of this genus.

This is one of the first plants from Botany-bay that flowered in this country, and it is one of the most ornamentalⁿ.

24. Stem shrubby, slender, twining, five or six feet high, and more, red, branched, leafy. Leaves ternate, on petioles from an inch to two inches in length, channelled above, round underneath: leaflets ovate or elliptic, quite entire, the two side ones on very short petioles, the end one on a petiole half an inch in length, bending and swelling immediately under the leaflet, and having there a pair of deciduous stipules. Almost the whole plant is covered with hairs pressed close. Peduncles usually in pairs from the axils, tinged with red, as is also the calyx, the upper lip of which is emarginate or slightly bifid, the lower cut into three awl-shaped equal

segments. Corolla scarlet, mixed with dull purple: banner bent back so as to lie on the calyx and cover it, scarlet at the end and on the sides, purple in the middle, except towards the base, where it is whitish; wings the length of the keel, but narrower; scarlet towards the tip, but dull dusky red towards the base; keel long and narrow, boat-shaped, red, readily splitting from the base upwards. Stamens very manifestly diadelphous. Legume very hairy, with the style remaining a long time.

It flowers from April to June.

Native of New South Wales, whence it was introduced about the same time with the foregoing.

25. Shrubby, climbing, growing to the height of many feet, if supported, and producing a great number of flowers on its pendant branches. Leaflets nearly round, and in the older ones especially curled at the edges. Flowers for the most part in pairs, of a glowing scarlet colour, at the base of the keel somewhat inclined to purple; the bottom of the banner is decorated with a large yellow spot, verging to green. It flowers from April to June. Introduced lately from New South Wales.

PROPAGATION AND CULTURE.

[Few of these plants have yet been cultivated in this country.]

The eighth and tenth are hardy enough to live in the open air in England. They may be propagated by seeds, or parting of the roots; the former is the best method, where good seeds can be obtained: these may be sown on a bed of light earth in the spring, and if the season should prove dry, they must be frequently refreshed with water, otherwise they will remain a long time in the ground before they vegetate: when the plants come up, they must be kept clean from weeds in the summer, and in the autumn when their stalks are decayed, if some rotten tanner's bark is spread over the surface of the ground, it will protect the roots from being injured by the frost. In the spring, the roots should be transplanted to the places where they are designed to remain, which must be in a warm sheltered situation, but not too much exposed to the sun, and in a light soil, where they will thrive and produce flowers annually. If these are propagated by parting of the roots, it should be done in the spring, before the roots begin to shoot: but they should not be parted oftener than every third year, for if they be frequently removed, they will not flower so strong.

[The tenth being the most tender of the two, the seeds may for greater security be sown in a hot-bed; and some of the plants kept in the green-house, or against a south wall, to be protected occasionally in severe weather with dung put to their roots.]

19. This is propagated by parting the roots, and each of the tubers will grow; the best time for this is the end of March or beginning of April, before they put out shoots. The roots should be planted in a warm situation, and in hard frost covered with tan or mulch to protect them, otherwise they will not live abroad in this country: where they have been planted against a south wall, they have thriven and flowered extremely well, which they seldom do in any other situation; and those roots which are planted in pots rarely flower, nor do their stalks rise near so high as those which are planted in the full ground.

20. Is increased by laying down the young branches in October, which will be rooted well by that time twelvemonth, especially if they are duly watered in dry weather, and may then be transplanted, either in a nursery for a year to get strength, or to the place where they are to remain for good, which should be in a warm light soil and a sheltered situation, where they will endure the cold of our ordinary winters very well; and if their roots are covered with straw, Fern, Peas-haulm, or any other light covering, there will be no danger of their being destroyed by the frost.

[3, 4, 11 and 22 must be kept in the bark stove,

^z Hort. kew. from Park.

¹ Hort. kew. from hort. angl.

¹ Hort. kew. ^m Vahl.

^b Linn.

^k Linn. mant.

ⁿ Curtis.

12, 21, 23, 24, 25 in the green-house or Cape stove. These may all be raised from seed.

Mr. Curtis thinks that n. 23 and 24 may probably succeed in the open air, in warm sheltered situations, if protected a little in inclement seasons.

Glycine Abrus. See *Abrus*.

Glycine monophyllos. See *Hedysarum*.]

GLYCYRRHIZA. (From γλυκὺς, *sweet*, and ρίζα, *a root*.)

Engl. *Liquorice.* Fr. *Reglisse.*

Lin. gen. n. 882. Reich. 955. Schreb. 1197.

Tournef. t. 210. Juss. 359. Gært. t. 148.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceæ*, or *Leguminosæ*.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, tubular, two-lipped, permanent: *upper lip* three-parted; the lateral segments linear, the middle one broader, bifid; *lower* entirely simple, linear.

COR. *Papilionaceous.* *Banner* ovate-lanceolate, straight, longer. *Wings* oblong, very like the keel, but a little larger. *Keel* two-petalled, acute, with a claw the length of the calyx.

STAM. *Filaments* diadelphous (simple and nine-cleft) straight. *Anthens* simple, roundish.

PIST. *Germ* shorter than the calyx. *Style* subulate, the length of the stamens. *Stigma* obtuse, ascending.

PER. *Legume* ovate or oblong, compressed, acute, one-celled.

SEEDS very few, kidney-form.

ESSENTIAL CHARACTER.

Cal. two-lipped; *upper lip* three-parted, *lower* undivided. *Legume* ovate, compressed.

SPECIES.

1. *Glycyrrhiza echinata.* *Prickly-headed Liquorice.*

Lin. spec. 1046. Reich. 3. 489. hort. upf. 230.

Jacqu. hort. 1. t. 95. Gært. fruct. 319. Lour. cochinch. 445.

G. capite echinato. Baub. pin. 352.

G. echinata. Ger. 1. 119. f. 1. emac. 1302. f. 1. Park. theat. 1099. n. 4.

Dulcis radix. Camer. epit. 423.

Pseudo-glycyrrhiza. Rivin. tetr. t. 3.

Legumes prickly; *leaves* stipuled, with the terminating leaflet sessile.

2. *Glycyrrhiza glabra.* *Common Liquorice.*

Lin. spec. 1046. Reich. 3. 489. hort. cliff. 490.

mat. med. 173. Woodv. med. bot. 458. t. 167.

Sauv. monsp. 232. D'Affo aragon. n. 699. Lour. cochinch. 446.

G. filiquosa vel germanica. Baub. pin. 352.

G. vulgaris. Dod. pempt. 341. Ger. 1119. f. 2. emac. 1302. f. 2. Park. theat. 1099. n. 3. Raii hist. 910. syn. 324.

G. radice repente vulgaris Germanica. Baub. hist. 2. 328.

Legumes smooth, no stipules, the terminating leaflet petioled.

3. *Glycyrrhiza hirsuta.* *Hairy Liquorice.*

Lin. spec. 1046. Reich. 3. 490.

Legumes hirsute, the terminating leaflet petioled.

[4. *Glycyrrhiza asperima.* *Rough Liquorice.*

Lin. syst. 669. suppl. 330.

G. aspera. Pallas itin. 1. 499. t. M. f. 3.—et, hispida. 3. 754. t. G. g. f. 1; 2.

Legumes smooth? leaflets elliptic, cusped, stalk hispid, scabrous.

DESCRIPTIONS, &c.

These are tall-growing, perennial, herbaceous plants, with the stalks somewhat woody at bottom. The stipules are distinct from the petiole. The flowers in a head or spike, from the axils and at the ends of the branches. The seed-vessel a legume or pod, smooth, hairy, or prickly.

1. The common petiole has a distinct rim with a nerve along the middle of it. The leaflets are lanceolate-ovate. The stipules ensiform. The flowers in a roundish head^a. According to Gmelin, the stipules are small and oblong, not ensiform.]

The stalks and leaves of this are very like those of the second, but the flowers are produced in shorter

^a Linn. spec.

spikes, and the pods are very short, broad at their base, end in acute points, and are armed with sharp prickles. It flowers from april to june, and in warm seasons will perfect seeds in England.

[Native of monte Gargano in Apulia, of the northern provinces in China, and of Tartary.—Cultivated by Gerarde in 1596.]

2. The roots run very deep into the ground, and creep to a considerable distance, especially where they stand long unremoved. From these arise strong herbaceous stalks, four or five feet high. Leaves composed of four or five pairs of ovate leaflets, terminated by an odd one: these and the stalks are clammy, and of a dark green. Flowers in axillary spikes, standing erect, and of a pale blue colour. Pods short, containing two or three seeds.

[The common petiole is extended beyond the uppermost pair of leaflets; the spikes are oblong, and the flowers distant^b.—Native of the South of Europe, in France, Spain and Italy; also of China. Cultivated in China, Germany, England, &c. Here particularly about Pontefract in Yorkshire, Work-sop in Nottinghamshire, and Godalmin in Surry;] and of late years there has been much raised in the gardens near London. [It appears from Turner's herbal that it was cultivated in England in 1562: and Stow informs us that "the planting and "growing of Licorish begun about the first year of "Queen Elisabeth." (1558.) Gerarde (1597) relates, that he had plenty in his garden; and that the poor people of the north parts of England manured it with great diligence, whereby they obtained great plenty thereof. Ray affirms that the Liquorice root of English produce is superior to the foreign. The quantity now exported from Spain is said to be annually not less than 4000 quintals, or nearly 200 tons, a considerable part of which is supposed to be purchased by the porter brewers in London^c.]

3. This has much the appearance of the two foregoing sorts, but the pods are hairy and longer. Native of the Levant, whence the seeds were sent to Paris by Tournefort.

[Cultivated in 1739, by Mr. Miller^d.

4. This has rather the air of an *Astragalus*. Root slender and very long, extremely sweet, especially in the spring. The flower pale violet. Discovered by Pallas, on sandy hills between the Wolga and the Jaick^e.

Liquorice root contains a great quantity of saccharine matter, with some proportion of mucilage. Lightly boiled in a little water it gives out nearly all its sweetness: the decoction, pressed through a strainer, and inspissated with a gentle heat till it will no longer stick to the fingers, affords a better extract than that brought from abroad, and its quantity amounts to near half the weight of the root. Rectified spirit takes up the sweet matter of the Liquorice equally with water; and as it dissolves much less of the insipid mucilage, the spirituous tincture and extract are sweeter than the watery. Liquorice is in common use as a pectoral or emollient in catarrhal disfluencies on the breast, coughs, hoarsenesses, &c. The infusions or extracts are commodious vehicles for other medicines^f.]

PROPAGATION AND CULTURE.

2. This plant delights in a light sandy soil, which should be three feet deep at least, for the goodness of Liquorice consists in the length of the roots: the ground in which you intend to plant Liquorice, should be well dug and dunged the year before you plant it, that the dung may be perfectly rotted, and mixed with the earth, otherwise it will be apt to stop the roots from running down; and before you plant it, the ground should be dug three spades deep, and laid very light; when your ground is thus well prepared, you should furnish yourself with fresh plants taken from the sides or heads of the old roots, observing that they have a good bud or eye, otherwise

^b Linn. spec.

^c Towns. Spain. 2. 356.

^d Hort. kew.

^e Linn. suppl.

^f Lewis & Woodv.

they are subject to miscarry; these plants should be about ten inches long, and perfectly sound.

The best season for planting them is in the beginning or middle of march, which must be done in the following manner, viz. First strain a line across the ground in which you would plant them, then with a long dibble made on purpose, put in the shoot, so that the whole plant may be set straight into the ground, with the head about an inch under the surface in a straight line, about a foot asunder, or more, in the rows, and two feet distance row from row; and after having finished the whole spot of ground, you may sow a thin crop of Onions, which being plants that do not root deep into the ground, nor spread much above, will do the Liquorice no damage the first year; for the Liquorice will not shoot very high the first season, and the hoeing of the Onions will also keep the ground clear from weeds; but in doing of this you must be careful not to cut off the top shoots of the Liquorice plants when they appear above ground, which would greatly injure them; and also observe to cut up all the Onions which grow near the heads of the Liquorice; and after your Onions are pulled up, you should carefully hoe and clean the ground from weeds; and in october, when the shoots of the Liquorice are decayed, you should spread a little very rotten dung upon the surface of the ground, which will prevent the weeds from growing during the winter, and the rain will wash the virtue of the dung into the ground, which will greatly improve the plants.

In the beginning of march following you should slightly dig the ground between the rows of Liquorice, burying the remaining part of the dung; but in doing of this, you should be very careful not to cut the roots. The stirring of the ground will not only preserve it clean from weeds a long time, but also greatly strengthen the plants.

The distance which I have allowed for planting these plants, will, I doubt not, by some, be thought too great; but in answer to that, I would only observe, that as the largeness of the roots is the chief advantage to the planter, so the only method to obtain this, is by giving them room; and besides, this will give a greater liberty to stir and dress the ground, which is of great service to Liquorice; and if the plantation designed were to be of an extraordinary bigness, I would advise the rows to be made at least three feet distant, whereby it will be easy to stir the ground with a breast plough, which will greatly lessen the expence of labour.

These plants should remain three years from the time of planting, when they will be fit to take up for use, which should not be done until the stalks are perfectly decayed; for when it is taken up too soon, it is subject to shrink greatly, and lose of its weight.

The ground near London being rich, increases the bulk of the root very fast; but when it is taken up, it appears of a very dark colour, and not near so lightly as that which grows upon a sandy soil in an open country.

[GLYCYRRHIZA. See *Abrus*, *Astragalus*, and *Sophora*.

GMELINA. (From *Joh. Georg. Gmelin*, Professor of Natural History at Petersburg, and then of Botany at Tubingen. He travelled during ten years in Siberia, and published *Flora Sibirica* in 1747, four volumes quarto.)

Lin. gen. n. 763. *Reich.* 821. *Schreb.* 1023. *Gärtn. t.* 56. *Juss.* 108.—*Michelia. Amm. act. petr. tom.* 8.

Class. 14. 2. *Didynamia Angiospermia.*
Nat. order of Personatae.—Vitices, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, very small, subglobular, four-toothed, permanent.

COR. one-petalled, bell-shaped, patulous; the border four-cleft; the upper segment wider and vaulted; the lower and lateral segments obtuse, smaller, spreading, rounded.

STAM. Filaments four, two of which are thicker, and two bowed in and ascending. *Anthers*, two thicker, parted; two smaller, simple.

PIST. Germ roundish. *Style* the length of the smaller stamens. *Stigma* simple.

PER. *Drupe* ovate, one-celled.

SEED. Nut ovate, smooth and even, two-celled: (three-celled, with the lowest cell barren. *G.*)

ESSENTIAL CHARACTER.

Cal. slightly four toothed. *Cor.* four-cleft, bell-shaped. *Anthers* two-parted, two simple. *Drupe* with a two, or three-celled nut.

SPECIES.

1. *Gmelina asiatica.*

Lin. spec. 873. *syft.* 565. *Reich.* 3. 162. *fl. zeyl.* n. 230. *Pluk. alm. t.* 305. *f.* 3. & *t.* 97. *f.* 2. (*Lycium*). *Lour. cochinch.* 377. *Rumph. amb.* 2. 127. *t.* 40.

G. lobata. Gärtn. fruct. 268.

Michelia spinosa, flor. luteis. Amman in act. petrop. 8. 218. *t.* 18.

DESCRIPTION, &c.

A tree, with round stiff upright branches. Leaves opposite, petioled, ovate, tomentose underneath, having frequently a shorter sharp lobe on each side. Spines axillary, opposite, horizontal, pubescent at the tip, the length of the petioles. Flowers from the end of the tender twigs, on peduncles. The fruit is a berried drupe, the size of Jujubes, black and smooth: the shell bony, thick at top, with two small lateral lobes; remarkably acuminate at bottom. In each of the two upper cells is a single seed, thickish, convex on one side, and flattish on the other; whitish or pale straw-colour, with a small umbilical caruncle below the top: there is no albumen or white, but the embryo is of the same form with the seed: the cotyledons or seed-lobes are elliptic, fleshy and thickish.

The *Cumbulu* of the *hortus malabaricus* 1. p. 75. *t.* 41. is by no means *Bignonia Catalpa*, but a genuine species of *Gmelina*, as abundantly appears from the fruit.

Jambosa filvestris parvifolia of Rumphius (1. 129. *t.* 40.) cited by Linneus as this species, is a species of *Eugenia*.

GNAPHALIO AFFINIS. See *Gnaphalium*.]

GNAPHALIUM. (From *γναφαλον*, tomentum, cotton or nap.)

Lin. gen. n. 946. *Reich.* 1026. *Schreb.* 1282.

Juss. 179.—*Elichrysum. Tournesf. t.* 259. *Dill.*

elth. 107, 108. *Gärtner t.* 166.

Helichrysum. Vaill. mem. acad. par. 1719. 21. 37. 38.

Antennaria. Gärtn. t. 167. *Anaxeton. Gärtn. t.* 166.

Class. 19. 2. *Syngenesia Polygamia Superflua.*

Nat. order of Compositæ Discoideæ.—Corymbiferae. Juss.

GENERIC CHARACTER.

CAL. common rounded, imbricate, with the marginal scales rounded, scariose, coloured.

COR. compound. *Corollets* hermaphrodite, tubular, with apetalous females sometimes intermixt. *Hermaphrodites* funnel-form, with a five-cleft, reflex border.

STAM. (In the hermaphrodites.) *Filaments* five, capillary, very short. *Anther* cylindric, tubulous.

PIST. Germ ovate, style filiform, the length of the stamens, stigma bifid—in the females, reflex.

PER. none. *Calyx* permanent, shining.

SEEDS solitary, oblong, small, crowned with a capillary or feathered down.

REC. naked.

OBS. *G. arboreum* has a woolly receptacle. Some species have dioecous flowers, which is singular in this class.

ESSENTIAL CHARACTER.

Cal. imbricate, with the marginal scales rounded, scariose, coloured. Down feathered (or simple). *Recept.* naked.

• *Linn. syft.*

^b *Gärtner.*
^a *Loureiro.*

^c *Ibid.*

SPECIES.

* Shrubby, with white flowers.

- [1. *Gnaphalium eximium*.
Lin. syst. 745. *Reich.* 3. 747. *mant.* 573. *Curt. magaz.* 300. *Edw. birds* t. 183. (*Elichrys-um*).
Leaves sessile, ovate, crowded, upright, tomentose; corymb sessile.
2. *Gnaphalium arboreum*. *Tree Everlasting*.
Lin. spec. 1191. *syst.* 745. *Reich.* 3. 747. *amoen.* 6. 98. *Berg. cap.* 259.
Anaxeton arboreum. Gärtn. fruct. 2. 407.
Leaves sessile, linear, smooth on the upper surface, rolled back along the edge, flowers in a kind of head on elongate peduncles.
3. *Gnaphalium grandiflorum*. *Great-flowered Everlasting*.
Lin. spec. 1191. *syst.* 745. *Reich.* 3. 747. *Berg. cap.* 245. *Burm. afr.* 213. t. 76. f. 1.
Leaves stem-clasping, ovate, three-nerved, lanuginous on both sides.
4. *Gnaphalium fruticans*.
Lin. syst. 745. *Reich.* 3. 748. *mant.* 282.
Leaves ovate, stem-clasping, stem rigid, cyme sessile.
5. *Gnaphalium crispum*.
Lin. syst. 745. *suppl.* 363.
Leaves tomentose underneath, scabrous above, root-leaves petioled, oblong, stem-leaves embracing, waved.
6. *Gnaphalium appendiculatum*.
Lin. syst. 745. *suppl.* 363.
Leaves sessile, imbricate, lanceolate, woolly, appendicled at the tip with a scariose membrane.
7. *Gnaphalium coronatum*.
Lin. spec. 1191. *Reich.* 3. 748. *Burm. afr.* 188. t. 69. f. 3.
Leaves sessile, lanceolate, corymbs compound, sessile, peduncles leafless, calyxes crowned.
8. *Gnaphalium discolorum*.
Lin. spec. 1191. *syst.* 745. *Reich.* 3. 748. *Burm. afr.* 224. t. 79. f. 4.
G. pyramidale. Berg. cap. 255.
Leaves sessile, lanceolate, calyxes white, lower scales flesh-coloured.
9. *Gnaphalium muricatum*.
Lin. spec. 1192. *syst.* 746. *Reich.* 3. 749. *hort. cliff.* 403. *Berg. cap.* 262. *Burm. afr.* 221. t. 79. f. 1. *Petiv. gaz.* t. 7. f. 3. (*Argyrocome*). *Raii suppl.* 182. 14. (*Xeranthemum*)—item, 193. n. 38. *Pluk. mant.* 92. (*Gnaphaloides*). *Pluk. amalib.* t. 406. f. 6. (*Lych-nis*)—item, *Pluk. mant.* 190. (*Xeranthemum*).
- β. *G. fruticosum, fol. rarioribus, capitatum. Burm. afr.* 223. t. 79. f. 2. *Raii suppl.* 182. 15. (*Xeranthemum*). *Pet. gaz.* t. 8. f. 1. *Pluk. amalib.* t. 410. f. 2. (*Frutex æthiopicus*).
- γ. *G. frutescens, foliolis lanceolatis æqualibus, umbellatum. Burm. afr.* 223. t. 79. f. 3. *Pluk. alm.* 72. (*Elichrysium*).
Leaves subulate, mucronate, umbel compound, calyxes cylindric, containing about three flowers.
10. *Gnaphalium ericoides*. *Heath-leaved Everlasting*.
Lin. spec. 1193. *Reich.* 3. 750. *amoen.* 6. 99.
Leaves sessile, linear; outer calyxes rude, inner flesh-coloured.
11. *Gnaphalium teretifolium*.
Lin. spec. 1193. *Reich.* 3. 750. *hort. cliff.* 401. *Berg. cap.* 261. *Burm. afr.* 217. t. 77. f. 3. *Pluk. alm.* t. 308. f. 2. (*Millefolium*).
Leaves crowded, almost columnar, corymbs branched, calyxes ferruginous on the outside.
- ** Shrubby, with yellow flowers.
12. *Gnaphalium mucronatum*.
Lin. syst. 746. *Reich.* 3. 750. *mant.* 283. *Berg. cap.* 269. *Burm. afr.* 179. t. 66. f. 3. (*Xeranthemum*).
Leaves subulate, mucronate, calycine scales roundish.]
13. *Gnaphalium Stoechas*. *Common shrubby Everlasting*.
Lin. spec. 1193. *Reich.* 3. 751. *hort. cliff.* 401. *upf.* 256. *Gouan monsp.* 435. *Scop. carn.* n. 1052. *Krock. filef.* n. 1372. *D'Asso aragon.*

- n. 814. *Blackw. t.* 438. *Hall. helv.* n. 145. (*Filago*).
- Elichrysium f. Stoechas citrina angustifolia. Baub. pin.* 264.
- Helichrysium f. Chrysocome angust. vulgaris. Clus. hist. Mor. hist.* 3. 87. n. 8. f. 7. t. 11. f. finist. ord. 1.
- *Chrysocome f. Stoechas citrina. Park. parad.* 374. n. 4. t. 373. f. 6.—minor. *Barrel. ic.* 410. 409. 278.
- Stoechas citrina. Dod. pempt.* 268.—*tenuifolia nar-bonenfis. Baub. hist.* 3. 154. f. 2. *Raii hist.* 281.—f. *Amarantus luteus. Ger. emac.* 646.
Leaves linear, corymb compound, branches wandlike.
14. *Gnaphalium ignescens. Red-flowered Everlasting.*
Lin. spec. 1194. *Reich.* 3. 751. *Boerb. lugdb.* i. 120. 3. (*Elichrysium*).
Leaves sub lanceolate, tomentose, sessile, corymbs alternate, conglobate, flowers globular.
- [15. *Gnaphalium dentatum.*
Lin. spec. 1194. *Reich.* 3. 751. *Burm. afr.* 185. t. 68. f. 3. (*Coma aurea*).
Leaves wedge-shaped, toothed, sessile, corymb simple.
16. *Gnaphalium ferratum.*
Lin. spec. 1194. *Reich.* 3. 752. *amoen.* 6. 98. *Breyn. ic.* 29. t. 18. f. 2. *Burm. afr.* 216. t. 77. f. 2.
Leaves stem-clasping, lanceolate, serrate, naked on the upper surface.
17. *Gnaphalium patulum. Spreading Everlasting.*
Lin. spec. 1194. *Reich.* 3. 752. *hort. cliff.* 402. n. 15. *Berg. cap.* 249. *Boerb. lugdb.* i. 121. n. 14. (*Elichrysium*).
Leaves stem-clasping, spatulate, corymbs aggregate, branches spreading.
18. *Gnaphalium petiolatum.*
Lin. spec. 1194. *syst.* 746. *Reich.* 3. 752. *hort. cliff.* 402. 16. *Burm. afr.* 214. t. 76. f. 2.
Leaves ovate, quite entire, petioled; flowers crowded, terminating.
19. *Gnaphalium crassifolium. Thick-leaved Everlasting.*
Lin. syst. 746. *Reich.* 3. 752. *mant.* 112.
Leaves broad-lanceolate, subpetioled, leathery, tomentose, corymb compound, stalk proliferous.
20. *Gnaphalium maritimum. Sea Everlasting.*
Lin. syst. 746. *Reich.* 3. 753. *mant.* 283.
Very much branched, leaves lanceolate, sessile, sharpish, inmost calycine scales gold-coloured.
21. *Gnaphalium repens.*
Lin. syst. 747. *Reich.* 3. 753. *mant.* 283.
Leaves linear, stem creeping, straight, branches upright, very simple.
22. *Gnaphalium umbellatum.*
Lin. syst. 747. *suppl.* 363.
Leaves in bunches, subulate, twisted, umbels simple, terminating, sessile.
23. *Gnaphalium hispidum.*
Lin. syst. 747. *suppl.* 363.
Leaves linear, semicylindric, grooved, hispid, patulous; heads terminating, simple.
- *** Herbaceous, with yellow flowers.
24. *Gnaphalium cylindricum.*
Lin. spec. 1194. *Reich.* 3. 753. *amoen.* 6. 99. *Pluk. phyt.* t. 298. f. 4.
Leaves sessile oblong tomentose, corymbs unequal, calyxes smooth, cylindric, sessile.]
25. *Gnaphalium orientale. Eastern Everlasting.*
Lin. spec. 1195. *Reich.* 3. 754. *hort. cliff.* 402. *upf.* 256. *Gärtn. fruct.* 2. 404. *Baub. pin.* 264. 5. *prodr.* 123. *Comm. hort.* 2. 109. t. 55. (*Elichrysium*). *Mor. hist.* 3. 86. 1. f. 7. t. 10. f. ult. *Park. parad.* 374. n. 3. (*Helichrysium*).
Broad-leaved Eastern Everlasting.
- β. *G. fruticosum. Mill. dict.* n. 20. *fig. t.* 131. f. 1.
Narrow-leaved Eastern Everlasting.
Leaves linear-lanceolate, sessile, corymb compound, peduncles elongate.

- [25. *Gnaphalium arenarium*.
Lin. spec. 1195. *Reich.* 3. 754. *fl. succ. n.* 738.
mat. med. 185. *Pollich pal. n.* 783. *Krock. files.*
n. 1373. *Thunb. jap.* 312. *Fl. dan. t.* 641.
Blackw. t. 524.
Elichrysum f. Stoechas citrina latifolia. *Baub. pin.*
 264.
Stoechas citrina germanica, latiore folio. *Baub. hist.*
 3. 153. *Raii hist.* 231.
Amaranthus luteus latifolius. *Ger. emac.* 646. *f.* 2.
 Broad-leave Goldilocks.
Leaves lanceolate, the lower ones obtuse; corymb com-
pound; stalks quite simple.
 27. *Gnaphalium rutilans.* *Shining-flowered Everlasting.*
Lin. spec. 1195. *Reich.* 3. 754. *hort. cliff.* 401.
Dill. elth. 127. *t.* 107. *f.* 127.
Leaves lanceolate; corymb decomposed; stalk branched
at bottom.
 [28. *Gnaphalium milleflorum.*
Lin. syst. 747. *suppl.* 362.
Flowers corymbed, fastigate, reddish-white, calyxes sub-
cylindric.
 29. *Gnaphalium imbricatum.*
Lin. spec. 1195. *Reich.* 3. 754. *Burm. afr.* 226.
t. 80. *f.* 2.
G. paniculatum. *Berg. cap.* 256.
Leaves lanceolate, tomentose; calycine scales reflex; stalk
branched.
 30. *Gnaphalium cymosum.* *Branching Everlasting.*
Lin. spec. 1195. *Reich.* 3. 755. *hort. cliff.* 401.
Berg. cap. 258. *Pluk. alm. t.* 279. *f.* 1. *Dill.*
elth. 128. *t.* 107. *f.* 128.
Leaves lanceolate, three-nerved, smooth on the upper sur-
face; raceme terminating; stalk branched at bottom.
 [31. *Gnaphalium nudifolium.*
Lin. spec. 1196. *syst.* 747. *Reich.* 3. 755. *Berg.*
cap. 247. *Pet. gaz. t.* 82. *f.* 1. (*Elichrysum*).
Breyn. cent. 71.
Anaxeton nudifolium. *Gartn. fruct.* 2. 407.
Leaves lanceolate, three-nerved, naked, with netted
veins.
 32. *Gnaphalium luteo-album.* *Jersey Everlasting or*
Cudweed.
Lin. spec. 1196. *Reich.* 3. 755. *Huds. angl.* 359.
With. 893. *Guan. hort. monsp.* 434. *Pollich*
pal. n. 784. *Hall. herb. n.* 147. (*Filago*). *Krock.*
files. n. 1374. *t.* 38. *v. l.* 2. *D'Assaragen. n.* 815.
Volk. no. t. 194. *Barrel. ic.* 367. (*Chrys-*
come). *Clus. i.* 329. *i.* *Lcb. ic.* 1. 485. 2.
Gnaph. majus lato o. longo folio. *Baub. pin.* 263.
Pluk. alm. t. 31. *f.* 6. *Mor. hist.* 3. 88. *n.* 20. *f.* 7.
t. 11. *f.* 20.
G. o. longo fol. *Ger. emac.* 643. 13. *Raii hist.* 296.
G. f. pinum obl. fol. *Park. theat.* 686. 6. — & 688. 9.
G. d. Stoechadem citrinam accedens. *Baub. hist.*
 3. 160. *f.* 2.
Elichrysum sylvestre latifolium capitulis conglobatis.
Baub. pin. 264. *Raii syn.* 182. *Petiv. brit. t.* 18.
f. 5.
Leaves half-stem-clasping, sword-shaped, repand, obtuse,
pubescent on both sides, flowers conglomerate.
 [33. *Gnaphalium albescens.*
Swartz prodr. 112.
Snowy-tomentose; leaves linear-lanceolate; stalk upright,
undivided at bottom; branches terminating, fastigate,
flowers crowded, conical.
 34. *Gnaphalium pedunculare.*
Lin. syst. 747. *Reich.* 3. 756. *mant.* 284.
Leaves spatulate, somewhat stem-clasping, tomentose un-
derneath, calycine scales sharpish.
 35. *Gnaphalium odoratissimum.* *Sweet-scented Ever-*
lasting.
Lin. spec. 1196. *syst.* 747. *Reich.* 3. 756. *Mill.*
fig. t. 131. *f.* 2. (*Elichrysum*). *Pluk. alm. t.*
 173. *f.* 6. (*Elichrysum*).
G. aureo-fulvum. *Berg. cap.* 257.
Leaves decurrent, mucronate, tomentose on both sides, flat.
 * * * * *Herbaceous, with white flowers.*
 36. *Gnaphalium fanguineum.*
Lin. spec. 1196. *Reich.* 3. 756. *amoen.* 4. 78.
G. aegyptiacum. *Pluk. mant.* 91. *Gron. orient.* 262.
G. fyriacum. *Barrel. ic.* 34.

- Gnaphalio montano affinis aegyptiaca.* *Baub. pin.*
 264.
Chrysocoma fyriaca. *Breyn. cent.* 146.
Baccharis Dioscoridis. *Rauw. itin. t.* 285.
Leaves decurrent, lanceolate, tomentose, flat, with a little
naked point at the end.
 37. *Gnaphalium foetidum.* *Strong-scented Everlasting.*
Lin. spec. 1197. *syst.* 748. *Reich.* 3. 757. *hort. cliff.*
 402. *upf.* 246. *Berg. cap.* 246. *Comm. hort.*
 2. 111. *t.* 56. *Volk. norib. t.* 194. *Pluk. alm.*
t. 243. *f.* 1. *Mor. hist.* 3. 115. *f.* 7. *t.* 20. *f.* 32.
 (*Conyza*).
Anaxeton foetidum. *Gartn. fruct.* 2. 406.
Leaves stem-clasping, quite entire, acute, tomentose un-
derneath, stalk branched.
 38. *Gnaphalium undulatum.* *Waved Everlasting.*
Lin. spec. 1197. *syst.* 748. *Reich.* 3. 757. *hort.*
cliff. 402. *Dill. elth.* 130. *t.* 108. *f.* 130. (*Eli-*
chrysum).
Leaves subdecurrent, lanceolate, waved, acute, tomentose
underneath, stalk branched.
 39. *Gnaphalium americanum.*
Swartz prodr. 112. *Mill. dict. n.* 17. *Brown.*
jam. 318. 1.
G. ad Stoechadem citrinam accedens. *Sloane cat.*
 125.
Root-leaves lingulate lanceolate, snow-white beneath;
stalk simple, upright, tomentose; flowers spiked and
lateral, sessile, crowded.
 [40. *Gnaphalium crispum.* *Curled Everlasting.*
Lin. spec. 1197. *Reich.* 3. 757. *Berg. cap.* 253.
Pluk. phyt. t. 298. *f.* 3.
Leaves stem-clasping, spatulate, tomentose, calyxes very
obtuse, plaited and waved, tomentose at the base.
 41. *Gnaphalium helianthemifolium.* *Dwarf-Cistus leaved*
Everlasting.
Lin. spec. 1197. *Reich.* 3. 757. *Volk. norib. t.*
 194.
Leaves somewhat stem-clasping, lanceolate, corymbs com-
pound, calycine scales somewhat plaited.
 42. *Gnaphalium squarrosum.*
Lin. spec. 1197. *Reich.* 3. 758. *Pluk. alm. t.* 32
f. 1.
Leaves sessile, tongue-shaped, tomentose, the inner calyxi-
scales subulate, and bowed back.
 43. *Gnaphalium stellatum.*
Lin. spec. 1198. *Reich.* 3. 758. *amoen.* 6. *afr.* 55.
Burm. afr. 225. *t.* 80. *f.* 1.
Leaves sessile, lanceolate, villise, calyxes acute, flesh-co-
loured on the outside.
 44. *Gnaphalium obtusifolium.* *Blunt-leaved Everlasting.*
Lin. spec. 1198. *Reich.* 3. 758. *Gron. virg.*
 95—121. *Dill. elth.* 130. *t.* 108. *f.* 131. (*Ely-*
chrysum). *Mor.* 3. 88. *n.* 21. *f.* 7. *t.* 10. *f.* 19.
 (*Helichrysum*).
Leaves lanceolate, stalk tomentose, panicled, flowers glo-
merate, conical, terminating.
 45. *Gnaphalium margaritaceum.* *American Everlasting*
or Cudweed.
Lin. spec. 1198. *Reich.* 3. 759. *hort. cliff.* 401.
upf. 255. *Huds. angl.* 360. *Gmel. sib.* 2. 107.
Kalm. itin. 2. 257. *edit. engl.* 1. 130. *Hall. herb.*
n. 146. (*Filago*).
G. americanum. *Clus. hist.* 1. 327. 3. *With.* 894.
Ger. emac. 641. 8. *Baub. hist.* 3. 162. *f.* 2. *Pet.*
brit. t. 18. *f.* 3. *Raii hist.* 284. *syn.* 182.
G. latifolium amer. *Baub. pin.* 263.
Argyroceme f. Gn. amer. *Park. parad.* 374. *n.* 5.
t. 373. *f.* 8.
Leaves linear-lanceolate, acuminate, alternate, stalk
branched at top, corymbs fastigate.
 46. *Gnaphalium plantagineum.* *Plantain-leaved Ever-*
lasting.
Lin. spec. 1199. *syst.* 748. *Reich.* 3. 759. *Gron.*
virg. 95—121. *Pluk. alm. t.* 348. *f.* 9.
Runners procumbent, stalk very simple, root-leaves ovate,
very large.
 47. *Gnaphalium dioicum.* *Mountain Everlasting or Cud-*
weed. Cat's-foot.
Lin. spec. 1199. *Reich.* 3. 759. *hort. cliff.* 400.
fl. lapp. n. 302. *succ. n.* 736. *mat. med.* 185.
Huds. angl. 360. *With.* 894. *Lightf. scot.* 470.
t. 20.

- t. 20. f. 1. (female). *Relb. cant. n. 603. Engl. bot. 267. Scop. carn. n. 1044. Neck. gallob. 348. Leers herb. n. 640. Pollich pal. n. 785. Allion. pedem. n. 624. Krock. files. n. 1376. Hall. belv. n. 157. (Filago).*
- G. montanum* flore rotundiore. *Baub. pin. 263. (male).—longiore. Mor. hist. 3. f. 7. t. 11. row 3. f. 2. (female).—& folio & fl. ibid. (female). Raii syn. 182.*
- G. mont. album, &c. Lob. ic. 1. 482. & 483. (purpleum). Ger. 516. 4, 5, 6. emac. 641. 6. (female). 640. 4, 5. (male). Raii hist. 283. syn. 181.*
- G. mont. f. Pes cati. Park. theat. 690. f. ult. Petiv. brit. t. 18. f. 4.*
- Pisofella minor. Dod. pempt. 68. male & female. Baub. hist. 3. 162. f. 3. Clus. hist. 1. 330. Fuchs. hist. 606.*
- Runners procumbent, stalk quite simple, corymb simple, flowers divided.*
- [48. *Gnaphalium alpinum. Alpine Everlasting. Lin. spec. 1199. syst. 748. Reich. 3. 760. fl. lapp. n. 301. succ. n. 737. Scop. carn. n. 1047? Krock. files. n. 1375? Hall. belv. n. 150? (Filago). Runners procumbent, stalk quite simple, head leafless, flowers oblong.*
49. *Gnaphalium indicum. Lin. spec. 1200. syst. 748. Reich. 3. 760. fl. zeyl. n. 307. Pluk. alm. t. 187. f. 5? Lour. cochinch. 497. Leaves lanceolate, stalk very much branched, diffused, corymbs unequal, calyxes coloured within.*
50. *Gnaphalium purpureum. Lin. spec. 1200. Reich. 3. 761. Gron. virg. 121. Dill. elth. 131. t. 109. f. 132. (Elichrysum). Mor. hist. 3. 92. n. 2. (Gnaphalium). Leaves lanceolate, naked, stalk erect, quite simple, flowers in lateral sessile spikes.*
51. *Gnaphalium denudatum. Lin. syst. 749. suppl. 364. Leaves spatulate, underneath snowy-white, tomentose, smooth and even above.]*
- ***** Resembling Filago. Herbaceous.
52. *Gnaphalium sylvaticum. Wood Everlasting, English or Upright Cudweed. Lin. spec. 1200. syst. 749. Reich. 3. 761. fl. lapp. n. 298. succ. n. 739. hort. cliff. 402. Hudf. angl. 360. With. 895. Lightf. scot. 471. Relb. cant. n. 604. Scop. carn. n. 1046. t. 56. Pollich pal. n. 786. Neck. gallob. 347. Leers herb. n. 641. Fl. dan. t. 254. Hall. belv. n. 148. (Filago). Krock. files. n. 1377. G. majus, angusto oblongo folio &, alterum. Baub. pin. 263. Mor. f. 7. t. 11. f. 1. G. rectum. Baub. hist. 3. 160. 1. G. anglicum. Lob. ic. 1. 482. f. 3. Ger. 515. 1. emac. 639. 1. Raii hist. 295. syn. 180. Petiv. brit. t. 18. f. 6. Stalk quite simple, upright, flowers scattered.*
- [53. *Gnaphalium spicatum. Vahl. symb. 1. 70. Filago ægyptiaca pumila spicata. Petiv. hort. succ. capensis minor spicata. Pet. gaz. n. 451. t. 8. f. 12. Chrysocoma spicata. Forsk. ægypt. 73. n. 433. Stems herbaceous, quite simple, flowers in whorls, leaves in bundles, linear, revolute.*
54. *Gnaphalium verticillatum. Lin. syst. 749. suppl. 364. Stalk quite simple, flowers in whorls, leaves linear.*
55. *Gnaphalium Oculus cati. Cat's-eye Everlasting. Lin. syst. 749. suppl. 364. Stalk prostrate, leaves ovate, flowers glomerate, terminating, extremely villose.*
56. *Gnaphalium pilosellum. Lin. syst. 749. suppl. 364. Leaves lanceolate, five-nerved, tomentose underneath, stalk naked, flowers in heads.*
57. *Gnaphalium declinatum. Creeping Everlasting. Lin. syst. 749. suppl. 365. Leaves linear-lanceolate, the calyxes with a white lanceolate ray.*
58. *Gnaphalium coronatum. Lin. syst. 749. suppl. 365. Leaves lanceolate, calyxes with a manifold roundish ray.*
59. *Gnaphalium fupinum. Dwarf Everlasting or Cudweed. Lin. syst. 749. Reich. 3. 761. Hudf. angl. 361. With. 896. Allion. pedem. n. 625. Hall. belv. n. 149. Fl. dan. t. 332. G. fuscum. Scop. carn. n. 1048. t. 57. G. alpinum. Lightf. scot. 471. t. 20. f. 2. G. medium. Villars. prosp. 31. t. 19. f. 1. G. sup. lavendulæ fol. Boct. mus. 107. t. 85. G. oblongo fol. Scheuch. alp. 2. 134. Stalk simple, procumbent, flowers scattered.]*
60. *Gnaphalium uliginosum. Marsh Everlasting or Cudweed. Lin. spec. 1200. Reich. 3. 762. fl. lapp. n. 300. succ. n. 740. hort. cliff. 402. Hudf. angl. 361. With. 896. Lightf. scot. 473. Relb. cant. n. 605. Scop. carn. n. 1049. Pollich pal. n. 787. Neck. gallob. 347. Leers herb. n. 642. Gunn. norv. n. 339. Krock. files. n. 1378. Hall. belv. n. 151. (Filago). Fl. dan. t. 859. Mor. hist. 3. 92. f. 7. t. 11. f. 14. Dod. 66. 3. Lob. ic. 1. 481. 1. Ger. 515. 2. emac. 639. 2. Park. theat. 686. 4. (Filago). Petiv. brit. t. 18. f. 7. Raii hist. 295. n. 5. syn. 181. 6. Stalk branched, diffused, flowers crowded, terminating.*
- [61. *Gnaphalium glomeratum. Cluster-flowered Everlasting. Lin. spec. 1200. syst. 749. Reich. 3. 762. Berg. cap. 251. Stalk diffused, inner scales of the calyxes subulate and naked, leaves somewhat stem-clasping.*
62. *Gnaphalium japonicum. Lin. syst. 749. Thunb. jap. 311. Herbaceous: upright; leaves linear-sword-shaped, snowy-white underneath, heads terminating.*
63. *Gnaphalium trinerve. Forst. fl. austr. n. 289. Shrubby: leaves sessile, lanceolate, three-nerved, silvery-white underneath, panicle corymbed, terminating; loose.*
64. *Gnaphalium lanatum. Forst. fl. austr. n. 290. Herbaceous, woolly: leaves linear-oblong, callous-mucronate at the tip, corymb contracted, stalk very simple.*
65. *Gnaphalium involucreatum. Forst. fl. austr. n. 291. Herbaceous: leaves linear, elongate, mucronate, tomentose underneath; head terminating, leafy.*
66. *Gnaphalium sinuatum. Lour. cochinch. 497. Herbaceous: branches assurgent, leaves ovate-lanceolate, sinuate, toothed, hairy on both sides.*

DESCRIPTIONS, &c.

The numerous species of this genus are either Undershrubs or Herbs. The leaves are placed alternately, and are for the most part hoary. The flowers usually terminate the stem and branches in globes or corymbs. The calyx is permanent, with yellow or white scales.—The Filagos are scarcely distinct from the Gnaphaliums, considered as a natural genus.

1. Stem the thickness of a finger, and tomentose. Leaves sharpish, without veins, white, with nap on both sides. Corymb terminating, without a common peduncle; there is one leaf, and usually only one flower to each peduncle. Flowers globular, with calyxes as large as the outer joint of a finger, consisting of imbricate, roundish, scarious, concave, obtuse, smooth, purplish scales^a.

Native of the Cape of Good Hope: as are also the eleven succeeding species.

2. This is a shrub the height of a man, determinately branched. Leaves resembling those of Rosemary, crowded, strict, acute, naked, underneath tomentose, as are also the branches; with smaller leaves alternate, remote. Corymb very much crowded:

^a Linn. mant.

calyxes white, with a cinereous pile^b.—It flowers most part of the year, and was introduced in 1770, by Mr. William Malcolm^c.

3. Branches round, simple, tomentose. Leaves alternate, obtuse, shortly acuminate; beneath tomentose-woolly, white, five-nerved; green above, tomentose, somewhat woolly; two inches long, frequent; the upper ones lanceolate, acute, smaller. Flowers large, roundish, snow-white, in roundish, heaped, solitary cymes, on long, tomentose, scaly peduncles^d.

Introduced in 1787, by Mr. Francis Masson^e.

4. *Stem* the thickness of a finger, determinately branched, villose. *Leaves* crowded, three-nerved, obtuse, mucronate, the size of the outer joint of the thumb, tomentose underneath, villose above but at length becoming naked. *Flowers* terminating, and heaped into a sessile head. *Calyx* yellow on the outside, but white within.

It approaches to the foregoing species; but the flowers are larger, the leaves not narrowed towards the top, the ball of flowers not on a peduncled common peduncle, the stem woody and stiff^f.

5. Large among the greater species. Root-leaves many, quite entire: stem-leaves attenuated. Peduncle elongated, tomentose, terminated by a compound, many-flowered cyme. Flowers small: outer calyxes red, inner yellow^g.

6. Large. Stem clothed with leaves up to the cyme. It is remarkable for a little, lanceolate, scariose membrane; terminating the leaf^h.

7. *Stems* woody, with villose branches. *Leaves* very tomentose. *Branchlets* from the upper axils of the leaves. *Corymb* terminating without a common peduncle: partial pedicels longer than the leaf at their base; the lateral ones longer than the middle one; bearing at the tip in form of a head many sessile, hirsute calyxes, dilated at the edge into a round, smooth, snow-white rayⁱ.

8. Stems undershrubby. Leaves woolly-tomentose underneath. Common peduncles elongated. Calyxes glomerate, with six lower scales, shorter and flesh-coloured, twelve inner white, blunt. Flowers in a kind of umbel, with about five florets in each^k.

9. Stem erect, round, pubescent; branches patulous, simple, alternate or somewhat heaped, slightly tomentose. Leaves round above, smooth, somewhat concave underneath, tomentose, rolled back on the edge, sessile, scattered, frequent, spreading, having smaller leaves in bundles in their axils. Flowers sessile, in terminating, multifid, sessile umbels, white-tomentose; divided into partial spiked umbels. Bractes linear-acuminate, small, subtomentose^l.

This varies with leaves sharp or prickly like those of Juniper. Florets three or more, seldom five or six^m.

10. This is a wretched plant with poor leaves and flowers. The branches are wand-like, rigid, unequal. The leaves remote and very minute. The flowers terminating, few, subsessile. The outer calyx consists of greenish-ash-coloured, subtomentose leaflets; the inner of smooth, oblong, flesh-coloured scalesⁿ.

Introduced 1774, by Mr. Masson. It flowers from march to august^o.

11. The calyxes are entirely smooth, ferruginous without, whitish within. Leaves subulate, naked, tomentose underneath, with the edge rolled back^p.

Stem ash-coloured, round, subtomentose; branches leafy, white tomentose: branchlets determinate, umbelled, erect, each loaded in the middle with other short aggregate branchlets. Leaves linear-subulate, mucronate-hooked, convex above, smooth, white-tomentose underneath, rolled back on the edge, sessile, scattered, approximating, two lines in length, spreading very much. Flowers pedicelled, in roundish

close corymbs at the ends of the branchlets, tomentose, naked, subpeduncled^q.

This, and all the foregoing species, with the next following, are natives of the Cape of Good Hope.

12. Branches a span long, erect, simple, round, slightly tomentose, ash-coloured. Leaves approximating, convex underneath, channelled above, mucronate with a slender pungent prickle, tomentose on both sides with wool pressed close, sessile, scarcely an inch long, from erect spreading. Flowers six, large, in panicles, terminating, contracted, on one-flowered tomentose peduncles^r.]

13. Stem about three feet high, with long slender irregular branches, the lower ones having blunt leaves, two inches and a half long, and an eighth of an inch broad at the end; those on the flower-stalks are very narrow, and end in acute points; the whole plant is very woolly. Flowers terminating in a compound corymb: calyxes at first silvery, but turning to a yellow sulphur-colour. If they are gathered before the flowers are much opened, the heads will continue in beauty many years, if kept from air and dust.

[According to Haller, all the flowers are androgynous. Calyx cylindric, three lines long, shining, smooth; the scales convex, blunt, elliptic, seldom containing more than fourteen florets^s.

The flowers have been formerly recommended as attenuants, discutients, and diaphoretics, but are not used in modern practice.

Native of Germany, France, Spain, and Istria.—Cultivated in 1629^t.

By old writers it is called *Gold-flower*, *God's-flower*, *Goldilocks*, and *Golden Stoechas*: by Ray *Narrow-leaved Goldyllocks* or *Cassidony*.]

14. Stem and leaves woolly; the former a foot high, sending out a few side branches, terminated by a compound corymb, the heads of which are small, of a gold colour, changing to red as they fade.

[The native place of growth is not known.—It was cultivated in 1768, by Mr. Miller.

15. The whole plant is hoary. Branches scarcely a span long and round. Leaves blunt at top and three-toothed, thick and veined. Flowers at the ends of the branchlets, few, small, shining, in oblong heads.

16. This is an elegant plant, suffruticose, soft and silky, yellow, much branched, with procumbent, simple, pubescent runners. Leaves very frequent, soft, entire, yellow. Flowers terminating, very many, in a close compact head, each on short pedicels^u.

17. Branches filiform, a foot or more in length, round, white-tomentose, patulous, somewhat branched. Branchlets alternate, simple, patulous, white-tomentose, ascending. Leaves alternate, blunt and ferrulate at top, linear and sessile at bottom, stem-clasping with rounded angles, white-tomentose underneath, greenish-subtomentose above, an inch long, spreading. Cymes terminating, loose, on long peduncles, tomentose, leafless; branches simple and branchletted; flowers large, peduncled^v.

Introduced in 1774, by Mr. Francis Masson. It flowers from august to january^w.

18. Related very nearly to the foregoing, according to Linneus, but it is not in his herbarium, and the plant in hort. cliff. is *Stæhelina arborescens*.

19. Stem a foot high, proliferous-branched, perennial except the proliferous branch. Leaves wider at the end, blunt, covered with a very thick down, stiffish, towards the flowers gradually narrower. Flowers numerous. Calyxes pale yellow. Corollas of a deeper colour. The florets before they open appear white^x.—Native of Majorca and Minorca. Introduced in 1774, by Mons. Richard. It flowers from july to september^y.

^b Linn. amoen.

^c Hort. kew.

^d Bergius.

^e Hort. kew.

^f Linn. mant.

^g Linn. suppl.

^h Ibid.

ⁱ Linn. spec.

^k Linn. spec. and syst.

^l Bergius.

^m Linn. syst.

ⁿ Linn. amoen.

^o Hort. kew.

^p Linn. spec.

^q Bergius.

^r Ibid.

^s Scopoli.

^t Park. parad.

^u Burm.

^x Bergius.

^y Hort. kew.

^z Linn. mant.

^a Hort. kew.

20. A shrub of four feet in height; the branches pubescent. Leaves alternate, somewhat crowded, tomentose, ash-coloured, when young very white. Corymbs terminating, close, roundish, on very short peduncles. Calyx rude, white with down: scales sharpish at the end, brownish about the edge. Flowers gold-coloured. It differs from the foregoing, in having the leaves by no means narrowed at the base^b.

Introduced about 1772. It flowers from June to August^c.

21. Stem creeping, rooting, perennial, perfectly simple, filiform, angular, four feet high. Branches alternate, two inches in length, bearing both leaves and flowers. Leaves filiform, naked, lax, somewhat viscid, alternate, patulous, acute. Heads of flowers terminating and glomerate. Calyxes blunt, containing few flowers, yellowish, the size of hemp seeds^d.

22. In the herb this bears a strong resemblance to *G. mucronatum* (n. 9.): but it differs in having a regular umbel, larger flowers, and the scales of the calyx a beautiful red, in which last circumstance it resembles a *Xeranthemum*^e.

23. This species is easily known by the stiff bristles on its acrosc leaves, and by its aggregate flowers^f.

These nine species, except the 19th, are natives of the Cape of Good Hope.

24. Herb branched, diffused; a span in length, tomentose all over: calyxes very long, imbricate, with equal, ovate, bluntish scales.

Native of the Cape^g.]

25. Stem seldom rising more than three or four inches high, and putting out many heads. Leaves narrow, woolly on both sides, and coming out without order. Flower-stems eight or ten inches high, with narrow hoary leaves all the way, terminated by a compound corymb of bright yellow flowers in large heads, coming out in May, and continuing in succession most part of the summer. It has been long in Portugal, where in the winter season they ornament the churches with the flowers.

[This is improperly called *Gn. orientale*, and Eastern Everlasting, for it is supposed to be a native of Africa.—Parkinson, who calls it *Golden Flower-gentle*, cultivated it in 1629.]

β. The shrubby or narrow-leaved sort grows naturally at the Cape of Good Hope. This differs from the other in rising with stalks four or five feet high, dividing into many branches, having long narrow leaves placed alternately; the corymb is loose, with the flowers on long pedicels; whereas those of the other are compact^h.

[26. This is an annual hoary plant, with an oblong root. Stem upright, a foot or more in height, white with down. Leaves alternate, an inch long, and three or four lines wide, half-stem-clasping, quite entire, white with down on both sides, blunt and frequently recurved a little at the tip, the edges rolled back. The shining yellow heads of flowers are two lines in length and breadth: the calycine scales are ovate, blunt, and lemon-coloured; as are also the corollasⁱ.

Native of Scania, Denmark, Germany, in dry sandy pastures and hills, flowering from July to September. Also in Japan, where it is used for Moxa, and as Tobacco; by way sides and in ditches, flowering from December to April^k.

It was formerly much recommended in dysenteries, &c. but is now disused. It is supposed to preserve woollen clothes from the moth^l.]

27. Stem slender, sending out many lateral branches below, with very narrow leaves, hoary on their under side. The flowers are produced in a compound corymb at the ends of the branches; at their first appearance they are of a pale red, but afterwards change to a gold colour; the calyxes are

small, and dry like the other species of Everlasting.

Native of the Cape of Good Hope.

[It flowers from the end of June to the beginning of August. Cultivated in 1732 by James Sherard, M. D. at Eltham^m.

28. Stalk a foot high, tomentose. Leaves lanceolate, hirsute on both sides. Corymb terminating, with above fifty flowers in it: peduncles subdichotomous, elongated: bractes scariose, ovate, pale: calyxes smooth and even, pale; with the lower scales purplish: corollas yellow.

Native of the Cape of Good Hope, where it was found by Thunbergⁿ.

29. Stem ash-coloured tomentose, diffused, erect, scarcely a foot high. Branches alternate, wand-like, simple, tomentose, erect. Leaves alternate, linear-wedge-shaped, sharpish, sessile, greenish-ash-coloured above, ash-coloured and more tomentose underneath, the length of the internodes, spreading and bent down. Flowers smallish, glomerate-corymbed, subsessile. Corymbs alternate, panicled, peduncled, at the ends of the branches.

Native of the Cape of Good Hope^o.

30. The flowers are entirely of a gold colour, and smooth, with blunt scales. Calyxes smooth and even^p. Perennial, about eighteen inches in height; stalks woody cylindric; leaves frequent, shaped as in *Genista tinctoria*, stiffish, concave, bright green and shining on the upper surface; on the flowering stems they are more sharp-pointed. Flowers very numerous, small, oblong. These and the leaves, when rubbed, emit an odour, like that of Southern-wood^q.

Native of the Cape of Good Hope. It was cultivated in 1732, by James Sherard, M. D.; and flowers from April to August^r.

31. Root-leaves lanceolate-ovate, by no means tomentose, scabrous about the edge. Stalk simple, a foot high, having smaller leaves of a more lanceolate shape at bottom, and naked at top. Flowers golden in a compound corymb^s. Receptacle naked, and therefore not of the genus *Athanasia*^t. Bergius however makes the receptacle chaffy; the chaffs lanceolate, submarginate, scariose, a little longer than the germ. Gartner separates this and some other *Gnaphaliums* under the name of *Anaxeton*, on account of the receptacle being villose, or chaffy only towards the circumference; and the down being simple or capillary.

Native of the Cape, and perennial.

32. This is an annual plant, and very woolly. Stalks many, upright, a foot or eighteen inches in height. Leaves alternate, quite entire, very soft, waved, and convolute. Calyxes whitish-yellow, soft, with ovate-lanceolate scales. Florets many female in the circumference, and a few androgynous in the centre.—It is higher than *G. arenarium* (n. 26.): the stalks are weaker and round; the leaves narrower and longer: the flowers more glomerate^u.

Native of the South of France, Spain, Portugal, Switzerland, Germany, the island of Jersey, the sea coasts of Wales, of the West of England, and near Bognor rocks in Sussex; in sandy grounds, and on dry banks and walls. Also of New Caledonia. It flowers from July to September.]

There is a variety of this with narrower leaves, not quite so woolly; the stalks rise higher, and are more branched; the flowers grow in close bunches on the top of the stalks, and are of a pale yellow colour.

[33. Shrubby. Native of Jamaica^v.

34. Stalk herbaceous, a foot and half in height, branched, diffused with elongated branches. Leaves alternate, spatulate except the upper ones which are lanceolate, green and almost naked on the upper surface. Peduncles terminating, very long, tomentose, whitish, with a very few leaves extremely

^b Linn. mant. and syst.

^c Hort. kew.

^d Linn. mant.

^e Linn. suppl.

^f Ibid.

^g Linn. amoen.

^h Mill. fig.

ⁱ Pollich.

^k Thunberg.

^l Krock.

^m Hort. kew.

ⁿ Linn. suppl.

^o Bergius.

^p Linn. spec.

^q Dillenius.

^r Hort. kew.

^s Linn. spec.

^t Linn. syst.

^u Linn. spec. Haller, Pollich, Krock.

^v Swartz.

narrow, terminated by a glomerate cyme. Calyx yellowish.

Native of the Cape of Good Hope^r.]

35. Lower leaves oblong and blunt. Stems about three feet high, dividing into many irregular branches, on which are oblong blunt leaves, hoary on their under side, but of a dark green above, decurrent. Stems terminated by a compound corymb of flowers, closely joined together, of a bright gold colour, but small, and changing to a darker colour as they fade. Native of the Cape.

[Cultivated 1691, in the royal garden at Hampton-court².]

36. Under leaves spreading near the ground, woolly on their under side. Stems about six inches high, with lanceolate acute leaves, woolly, terminated by a large corymb of flowers sitting very close, and of a fine red colour.

Native of Egypt and Palestine.

37. This is an annual plant, sending out many oblong blunt leaves near the root. Stems a foot and half high. Leaves alternate, when handled emitting a very rank odour. Stems terminated by a corymb of flowers, which have large silvery calyxes, that will retain their beauty several years.

Native of the Cape.

[It varies with golden calyxes^a. Cultivated in 1692, by Mr. George London, at Brompton^b.]

38. Annual. Bottom-leaves oblong, a little waved, hoary on their under side. Stems about a foot high. The whole plant has a disagreeable odour. The flowers in a terminating corymb: they are white and appear in July.

Native of the Cape of Good Hope, and also of North America.

[Cultivated in 1732, by James Sherard, M. D. at Eltham^c.

39. Annual. Seldom rises above six or nine inches in height. Flowers yellowish, and disposed pretty thick about the top of the stalk, which puts on the appearance of a shorter spike^d.

Native of Jamaica, in the coldest mountains of Liguanea.

40. Perennial. Stalks simple, hardish, tomentose, throwing out small branches from the axils; these, as well as the whole plant, are very white. The corymbs are leafless. The calyxes are white, naked, not ovate-lanceolate as in *Gn. patulum*, but plaited and waved.

Native of the Cape of Good Hope^e.

41. Perennial. Stalks wand-like, branched, tomentose. Leaves blunt, tomentose on both sides, but quite white underneath, a little waved, spreading, reflex. Corymb compound, terminating, sessile.—Native of the Cape of Good Hope^f.

Introduced in 1774, by Mr. Francis Maffon.

42. Stalks ascending, simple, scarcely a foot high, very tomentose. Leaves blunt. Flowers terminating, crowded. Calycine scales naked, purple or white, hirsute at the base.

Native of the Cape^g.

43. Stalks several, half a foot in height. Flowers glomerate. Calyxes smooth, consisting of numerous, ovate scales, which spread out quite flat as soon as the time of flowering is past, and are purple within, with snow-white tips.

Native of the Cape^h.]

44. This is an annual plant, with woolly obtuse leaves. Stems single, about nine inches high. Flowers in spikes from the side of the stalks, of a dirty white colour.

[Stalk hairy, branched, upright. Leaves bowed back, almost naked. Flowers conglobate, unequal, subsessile. Calyxes white, sharp. Corollas yellowⁱ.

Native of Virginia, Pennsylvania, and New England. Cultivated in 1699, by Mr. Jacob Bobart, in the Oxford garden^k.]

45. Root perennial, creeping, and spreading far, so as to become a troublesome weed. [Stalks extremely downy, white. Leaves, numerous, long, sessile, growing without order round the stem, entire at the edges, dark green, naked above, beneath covered with a thick down, and whitish. The flowering branches form a broad flat bunch: each branch contains numerous crowded heads, on short, branched, downy peduncles, but the middle ones sessile: scales of the calyx bluntly ovate, white, not downy. Seed crowned with a sessile feather of few simple rays, as long as the calyx. Haller says that the flowers are all hermaphrodite, but afterwards adds, that a few females are sometimes intermixed with them^l.

Native of North America, where it grows in vast quantities in uncultivated fields, glades, hills, &c. and is called *Life Everlasting*; because the silvery heads, properly dried, will keep their beauty long without changing^m. It is also found in Kamtschatka: and with us in England; having been observed near Bocking in Essex by Mr. Dale; and on the banks of Rymny river, for the space of twelve miles by Mr. Lhwyd. None of our old herbarists mention its being found wild in this island, but it has been long known in our gardens. It flowers from July to September.

A decoction of the flowers and stalks is used in America, to foment the limbs, for pains and bruisesⁿ.]

46. Perennial. From the main stalk come out runners, which take root in the ground. Stem-leaves narrower, woolly, alternate. Flowers in a terminating corymb, white and small, appearing in June and July.—Native of North America.

[Linneus observes, that it has altogether the air of the foregoing. He had seen only the female, and doubted whether it might not be a variety only of the next species.

It was cultivated by Mr. Miller in 1759^o.

47. Root woody, brown, strikes deep, throwing out a few rigid fibres; from the crown arise several creeping runners. The root-leaves form a thick tuft, and are oval at the extremity, tapering into a long footstalk; they are green and slightly hairy above, beneath white with a thick down. Stems erect, simple, from two or three to six or seven inches high, white, downy, clothed with numerous semialexicaul linear leaves, green above, white and downy beneath. Flowering heads three to eight crown the stem in a close bunch, on short peduncles; scales of the calyx blunt, the outer ones short, green covered with down, the inner widening upwards, long, smooth, white, shining, frequently tinged with purple. The calyxes bearing female flowers are cylindrical; the seed short, crowned by a sessile down with simple rays, longer than the calyx. The calyxes bearing hermaphrodite flowers are globular, shorter, and the feather does not exceed the calyx. Haller suspects that the hermaphrodite flowers are barren. It is rare that any ripe seed is produced, such being the case with many plants that creep by the roots. The female heads often have imperfect seeds; the hermaphrodites none at all. Not one of the figures are good^p.

Native of most parts of Europe, on open downs. With us on Newmarket heath and Gogmagog hills, Canham heath near Bury, Swaffham and Stratton heaths in Norfolk, in Cornwall, Wales, on Bernack and Wittering heaths, in the northern counties, and Scotland. Flowering in May and June.

48. Root perennial. Stalk entirely simple, shorter than a finger, with three or four lanceolate leaves. Root-leaves lanceolate-wedge-shaped, the upper surface green, smooth and even, the under white with a streaked nap, so that the edge even of the upper surface appears white. It has runners at the root like the foregoing. Flowers terminating, few, crowded, without leaves. Calyx cylindrical, swell-

^r Linn. mant.

^a Hort. kew. from Plukenet.

^z Linn. syst.

^b Hort. kew. from Plukenet and Morison.

^c Dill. elth.

^d Browne.

^e Linn. spec.

^f Ibid.

^g Ibid.

^h Linn. amoen. and spec.

ⁱ Linn. spec.

^k Hort. kew. from Mor. hist.

^l Woodw. Mfs.

^m Kalm.

ⁿ Ibid.

^o Hort. kew.

^p Woodw. Mfs.

ing at the base; the scales membranaceous at the tip, lanceolate, sharp, upright^a.—Linneus has observed only the female flowers, and doubts whether it may not be a variety of *Gn. dioicum*.

The colour of the flower is by no means shining in this; otherwise it has the appearance of the foregoing, the size, stalks, flowers, and runners; but the leaves are narrower, the calycine scales lanceolate, villose at the base, brown at the tip and edge^c.

Native of the Lapland Alps, and of Switzerland. Introduced in 1775, by Drs. Pitcairn and Fothergill^b.

49. Perennial. Stalk half a foot high, tomentose. Leaves ending in the petioles, broader at top, sharp, toothed, tomentose, white. Corymbs compound terminating the branches. Flowers small: calycine scales ovate, brown, those surrounding the disk dilated, round and white; so that the heads are brown with a white crown^d.

Native of the East Indies, and Cochinchina.

50. Annual. Stalks from a span to a foot in height, sometimes upright and unbranched, sometimes reclining and putting out a few branches, slender, tomentose. Leaves from green becoming hoary; those next the root broader, and (according to the figure) waved about the edge, quickly drying away; stalk-leaves narrower, till they become linear among the flowers, the heads of which are short and purplish. It flowers in summer and autumn^e.

Native of Carolina and Virginia. Cultivated in the Eltham garden before 1732.

51. Stalks prostrate, filiform, hardish, with alternate, upright branches. Leaves alternate, sessile, mucronate, the upper surface naked but not smooth. Corymb or umbel terminating, and very short; flowers peduncled. Calyx green, with a short, white ray.

Native of the Cape of Good Hope, Montin^f.

52. This is a biennial plant. In woods one stem from twelve to eighteen inches high generally grows from the root. In open ground the root-leaves form a thick tuft, and from among them arise several shorter stems, sometimes not more than three inches high, at first often declining, but very soon ascending. Root-leaves long, of a very narrow linear-lanceolate form, green and hairy above, white and thickly-downy beneath. Stalk simple, white, downy, clothed with numerous linear leaves, half embracing the stalk, green and hairy above, white and downy beneath, like the others. Flowers in a long spike, composed of very short branches, bearing from one to five or more flowers; the lower branches somewhat distant, the upper crowded; beneath each a leaf, similar to, but smaller than the stem-leaves. Flowering heads very small; scales of the calyx bluntly oval, greenish at the base, yellowish brown upwards, smooth with shining margins; exterior short, interior as long as the florets. Seeds minute, crowned with a sessile feather, having simple rays as long as the calyx^g. Female flowers numerous; hermaphrodites four or five^h.

Native of most parts of Europe. In Britain it has been observed in Norwood, Surrey; on Hampstead heath, and in the woods thereabouts; near Charlton; about Harefield; in Gamlingay park, Cambridgeshire; in Armingdale wood near Norwich; on Naseby field, and Thorp-Malsor in Northamptonshire; in rough pastures near Fladbury in Worcestershire; on a sandy heath, a mile from Shiffnall, on the road to Wolverhampton; on the banks of the canal in the parish of Cosely, Warwickshire; on the great island in Winander mere; and on the highlands of Scotland. It flowers in August.

53. Stems several, ascending, a finger's length, smooth, covered with leaves and flowers. Leaves unequal, acute, smooth above, subtomentose underneath, the upper ones longest. Flowers from all

the axils from top to bottom of the stem, glomerate, minute. Calycine scales scariose, ferruginous, shining, ovate-lanceolate.

Native of Egyptⁱ.

54. Annual. Stalk a span high, upright, without any branch. Leaves very narrow, an inch in length. Flowers in whorls over the whole stalk, and sessile. The whole plant, and even the flowers are ash-coloured. It is related to the foregoing.

Native of the Cape of Good Hope.

55. Stalks filiform, very many, decumbent, diffused, somewhat branching. Leaves sessile, almost naked. Flowers flattish, and cohering in circles. Calyx concealed by a very thick white nap. Corollas small, surrounded by nap.

Native of the Cape.

56. Perennial. Leaves three or four at the root, elliptic, bluntish. Scape twice as long as the leaves, hairy. Flowers terminating. Calyxes roundish, villose, white about the edge.

Native of the Cape.

57. Stalks prostrate, filiform. Leaves white with a fine nap, shining, crowded. Flowers in a terminating, fastigate, leafless corymb. Calyx ovate, smooth and even, testaceous and scariose. Florets many in a small calyx.

Native of the Cape^j. Introduced 1787, by Masson^k.

58. Perennial. Stalks a span high, upright, villose, flowering at the end, branched, hairy. Leaves alternate, narrow-lanceolate, with a very thick nap on them. Flowers in corymbs, heaped. Peduncles leafy. The flowers proceed as it were from the ray of a full calyx.—Native of the Cape^l.

59. This resembles *G. sylvaticum* very much, but it is low, and the stalk is decumbent whilst the plant is in flower^m.

Perennial.—Root-leaves in tufts, half or three quarters of an inch long, narrow linear-lanceolate, slightly hairy above, downy beneath but greenish. Stem two or three inches high, with two or three longer and narrower sessile leaves. Flowering heads single, not more than three or four, larger than in *Gn. sylvaticum*, alternate, either sessile or on short downy peduncles, from the axils of the upper leaves, which are not longer than the heads. Scales of the calyx lanceolate, with a green dorsal line at the base, and brownish-yellow shining tips and margins. Seeds elliptical, crowned with a sessile down having simple rays as long as the florets, and longer than the calyxⁿ. The florets are mostly female, but a few in the centre of the disk are hermaphrodite^o.

Native of the Swiss and Italian Alps; and the tops of the highland mountains in Scotland: found on Ben Lomond, by Dr. J. E. Smith; and five miles from Fort George, on the west side of the road to Aberdeen. It flowers in July and August.

60. Annual. Stem from three or four to seven or eight inches and even more, upright, covered with thick white down, and much branched; branches spreading, lower ones often procumbent, clothed with numerous leaves, particularly towards the summit, and these thickest and most downy. Leaves elliptical, tapering into a long footstalk, slightly downy and greenish above, more so and whitish beneath. The ends of the branches are crowded with numerous heads of nearly sessile flowers. Scales of the calyx lanceolate, smooth, brown, shining; when old blackish, almost hid in the down. Feather sessile, with few simple rays as long as the calyx^p.

Native of the greater part of Europe, in marshy places, especially where water stagnates in winter. It flowers in August.

61. Annual. Leaves spatulate, extremely hirsute. Heads leafy. Branches higher than the stalk^q.

Native of the Cape of Good Hope.

62. Root fascicled, with small fibres, annual. Stalks one or two, simple, naked at top, white with

^a Linn. spec.

^c Linn. fœc.

^e Hort. kew.

^b Linn. zeyl.

^d Dill. elth.

^f Linn. suppl.

^g Woodw. Mss.

^h Haller.

ⁱ Vahl.

^j Linn. suppl.

^k Hort. kew.

^l Linn. suppl.

^m Linn.

ⁿ Woodw. Mss.

^o Lightfoot.

^p Woodw. Mss.

^q Linn. syst.

down, a span and half in height. Root-leaves very many, drawn to a point below, sharp, entire, lax, often reflex, a palm in length and half a line in breadth: stem-leaves sessile, upright, shorter. Flowers on the stalk terminating, glomerate, sessile, purplish; the heads the size of a large pea.

Native of Japan; flowering in august^k.

63, 64, 65. Natives of New Zealandⁱ.

66. Stem four feet high, simple, erect. Leaves large, alternate. Flowers yellow, in terminating erect panicles, the marginal scales of the calyx being red and membranaceous.

Native of Cochinchina^m.]

PROPAGATION AND CULTURE.

The tender sorts, such as all those from the Cape, &c. 1 to 12, 15 to 24, 27 to 31, 33 to 35, 37 to 43, 51, 53 to 58, 61 to 66 Oriental Everlasting (n. 25.) &c. may be increased, by slipping off the heads, or by cuttings, during any of the summer months: they should be planted in a bed of light earth, (or in pots in a gentle hot-bed,) and covered with hand-glasses, or shaded with mats, observing to refresh them frequently with water in small quantities; these cuttings will put out roots in six or eight weeks, then plant them in pots filled with light earth, and place them in a shady situation till they have taken new root, when they may be removed to an open situation, and placed among other hardy exotics, till the middle or end of october; at which time they should be placed under a common frame, where they may be protected from frost, but in mild weather they should be exposed to the open air.

Common Shrubby Everlasting (n. 13.) ignescens (n. 14.) sweet-scented (25) sanguineum (36) are so hardy, as in very mild winters to live abroad in warm borders near walls, with little shelter.

Jersey Everlasting (n. 32.) and some others, will come up better from scattered seeds, than when they are sown by art; but if the seeds are sown, it must be soon after they are ripe. The plants require only to be kept clean from weeds, and to be thinned where they are too close.

Gn. margaritaceum and plantagineum (n. 45 and 46.) will thrive in almost any soil and situation, and are easily propagated by their creeping roots.

As to the common European sorts, if the seeds are permitted to scatter, the plants will come up in the spring, with greater certainty than if they were sown; but they are rather regarded as weeds than as garden plants.

[GNAPHALIUM. See *Athanasia*, *Conyza*, *Filago*, *Micropus*, *Scribium*, *Stoebe*, *Stæbelina*.

GNAPHALOIDES. See *Gnaphalium*.

GNEMON. See *Gnetum*.

GNETUM.

Lin. gen. Reich. n. 1188. Schreb. 1473. Juss. 406.

Class. 21. 8. Monoecia Monadelphia.

Nat. order of *Piperitæ*.—*Urticæ* Juss.

GENERIC CHARACTER.

Ament of whorls remote, callous, thickened, propped underneath with a partial calycle. This is peltate, orbicular, flat, quite entire, and contains sessile floscules; the males at bottom, the females above, in the same whorl.

* Males.

CAL. Scale ovate, minute, coloured.

COR. none.

STAM. Filament single, filiform, longer than the scale. Anthers double, connected.

* Females.

CAL. Scale torn, rude.

COR. none.

PIST. Germ ovate, immersed in the receptacle of the whorl, the length of the stamens. Style conic, short. Stigma trifid, acute.

PER. Drupe ovate, one-celled.

SEED. Nut oblong, streaked.

^k Thunberg.

ⁱ Forster.

^m Loureiro.

Obs. Rumphius has determined it to be dioecous; mine was monoecous: I have also seen an ament merely male, sitting on its own peduncle by the female floscule.

ESSENTIAL CHARACTER.

MALE. An ament with scales. Cor. none. Filam. one with two anthers.

FEM. An ament with scales. Cor. none. Style with a bifid stigma. Drupe with one seed.

SPECIES.

1. *Gnetum Gnemon*.

Lin. syst. 867. Reich. 4. 197. mant. 125.

Gnemon domestica. Rumph. amb. 1. 181. t. 71.

DESCRIPTION, &c.

Branches stiff, jointed, broader below the joints. Leaves opposite, petioled, lanceolate-ovate, quite entire, smooth and even. Aments axillary, peduncled, in pairs from each axil, in small whorls, from an orbicular, perfoliate, entire bracte, callous above, in which the floscules are immersed, the females above, or towards the rachis, usually six or seven in number; the males towards the edge or below.

Native of the East Indies^a; where the leaves, male catkins and fruits are eaten, but not raw^b.

Gnemon is the vernacular name in Ternate, &c.]

GNIDIA.

Lin. gen. n. 487. Reich. 528. Schreb. 666.

Juss. 77.—*Struthia*. Roy.

Class. 8. 1. Octandria Monogynia.

Nat. order of *Vepreculæ*.—*Thymelææ* Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, funnel-form, coloured: tube filiform, very long; border four-parted, flat.

COR. Petals four, sessile, flat, shorter than the calyx, and inserted into it.

STAM. Filaments eight, bristle-shaped, erect, almost the length of the flower. Anthers simple.

PIST. Germ ovate. Style filiform, inserted into the side of the germ, the length of the stamens. Stigma capitate, hispid.

PER. none. Fruit in the bottom of the calyx.

SEED single, ovate, obliquely acute.

Obs. Hence it differs from *Passerina* in the corolla only.

ESSENTIAL CHARACTER.

Cal. funnel-form, four-cleft. Pet. four, inserted into the calyx. Seed one, somewhat berried.

SPECIES.

1. *Gnidia pinifolia*.

Lin. spec. 512. syst. 372. Reich. 2. 195. mant.

375. Berg. cap. 122. Burm. afr. 112. t. 41.

f. 3. (*Rapunculus*). Seba mus. 2. 32. t. 32.

f. 5. (*Valerianoides*).

Leaves scattered linear; floral leaves in whorls.

[2. *Gnidia radiata*.

Lin. syst. 372. Reich. 2. 195. mant. 67. Burm. prodr. 12.

Leaves subulate three-sided erect, heads terminating sessile radiate, bractes lanceolate.

3. *Gnidia simplex*. Flax-leaved *Gnidia*.

Lin. syst. 372. Reich. 2. 195. mant. 67. Burm. prodr. 12.

G. viridis. Berg. cap. 125.

Thymelæa fol. Passerinae. Breyn. cent. 10. t. 6.

All the leaves linear acute; flowers terminating sessile.

4. *Gnidia tomentosa*.

Lin. spec. 512. syst. 372. Reich. 2. 196.

G. pubescens. Berg. cap. 124.

Leaves scattered ovate-oblong smooth, scabrous about the edge.

5. *Gnidia sericea*. Silky *Gnidia*.

Lin. syst. 373. Reich. 2. 196.

Passerina sericea. Lin. spec. 513. amæn. 4. 271.

Nectandra sericea. Berg. cap. 131.

Thymelæa sericea, &c. Burm. afr. 135. t. 49. f. 2.

Leaves ovate tomentose, floral leaves in fours.

6. *Gnidia oppositifolia*. Opposite-leaved *Gnidia*.

Lin. spec. 512. syst. 373. mant. 375. Reich. 2. 196. Pluk. alm. t. 323. f. 7. *Thymelæa*).

^a Linn. mant.

^b Rumphius.

β. *Passerina*

- β. *Passerina lævigata*. *Lin. spec.* 513. *amæn.* 4. 312.
Nectandra lævigata. *Berg. cap.* 134.
Thymelæa fol. planis acutis, &c. *Burm. afr.* 137.
t. 49. *f.* 3.
Leaves opposite lanceolate.
7. *Gnidia capitata*.
Lin. syst. 373. *suppl.* 224.
Leaves scattered lanceolate smooth, flowers in heads fortified with bractes, peduncles naked.
8. *Gnidia filamentosa*.
Lin. syst. 373. *suppl.* 224.
Leaves elliptically ovate very smooth approximating, flowers in heads, filaments capillary.
9. *Gnidia imbricata*.
Lin. syst. 373. *suppl.* 225.
Leaves oblong, imbricated in four rows, silky; flowers terminating in the axils of the leaves.
10. *Gnidia Sparrmanni*.
G. pinifolia. *Lin. syst.* 373. *suppl.* 225.
Leaves linear-subulate, flat above, sharp; flowers in pairs, axillary.
11. *Gnidia daphnæfolia*.
Lin. syst. 373. *suppl.* 225.
 α. *hirsuta*: leaves oblong spatulate, hirsutely hoary; flowers smaller.
 β. *glabra*: leaves oblong, alternated towards the base, almost naked; flowers larger.
Decandrous: leaves oblong, flat, quite entire; head terminating, peduncled, involucred; flowers five-cleft.

DESCRIPTIONS, &c.

These are shrubby plants, except the last; natives of the Cape of Good Hope. The leaves are opposite only in one or two sorts; in the rest they are scattered. The flowers come out at the ends of the stem and branches, usually distinct, seldom in parcels together.]

1. Stem three or four feet high, with a few side-branches. Leaves acuminate, pale on their under side with a strong longitudinal nerve or keel, and resembling those of Rosemary. The flowers come out almost in whorls from between the leaves at the extremities of the branches on short peduncles.

[Calyx white. Petals lanceolate, shorter than the calyx, white. Four of the stamens are within and four without the tube^a.

Cultivated by Mr. Miller in 1768. It varies with blue flowers.

2. This is a rough, proliferous shrub. Leaves mucronate, smooth. Heads radiate with lanceolate bractes, broader than the leaf. Flowers somewhat villose on the outside. Border of the calyx smooth within, the same length with the tube. Petals smaller than the calyx, and hairy. Four of the stamens extend beyond the tube; the other four lie in the throat of it^b.

3. Stems half a foot high, unequal, roughened with four tubercles from leaves that are fallen. Leaves upright, smooth and even. Flowers naked, sessile on the villose extremity of the branch; the calyx, petals, and anthers all yellow. The floral leaves not broader than the rest. Petals oblong, acuminate. Four stamens in the throat of the tube, the other four above it^c.

Introduced in 1786, by Mr. Francis Maffon^d.

4. The extremities of the twigs woolly, as in its congeners. The uppermost leaves somewhat pubescent. Four of the stamens standing out, and four in the throat of the tube. Petals small, emarginate^e.

5. Throat of the corolla crowned with eight coloured threads, the same length with the corolla itself, on the outside of the petals. Stamens four in the throat, and four within the tube^f.

Introduced in 1786, by Mr. Francis Maffon^g.

6. The uppermost leaves are blood-red at the extremity. Cultivated in gardens it acquires petals. Flowers villose on the outside. Stamens, besides

the four calluses above the throat, are four under the throat, and four in the middle of the tube^h.

Introduced in 1788, by Maffonⁱ.

7. Stem shrubby, with upright, round, purplish branches. Leaves very narrow and remote, smooth and even. Flowers aggregate, peduncled. Involucre eight-leaved, lanceolate, equal, half the length of the floscules; which are sixteen in number, sessile, pubescent, hoary: tube filiform; border short, five-parted. Stamens ten, five without and five within the throat. The flower resembles that of *Passerina*; and perhaps it may be a species of *Dais*^k.

8. This is a very smooth shrub, tubercled with the scars of fallen leaves. Leaves alternate, sessile, quite entire, without apparent veins. Heads of flowers solitary, sessile. Involucre smooth. Corolla villose, with a four-parted border. Four of the filaments the length of the corolla, four shorter in the throat.—There is a variety with narrower leaves, but it is easily known by the filaments^l.

9. Found at the Cape by Thunberg.

10. Branches smooth and even, not tomentose. Leaves not prickly, convex underneath, smooth and even, patulous. Flowers from the uppermost twigs, smooth: border sharp, twice the length of the tube. Four anthers above the throat, surrounded with hairs, and four within the tube, smaller.

Observed at the Cape, by Sparrmann^m.

11. This has the habit, leaves, manner of flowering, involucre, form and hairiness of the calyx, as in *Dais cotinifolia*; the structure and situation of the parts in the flower is exactly as in this genus, but not the number. The leaves are alternate, not opposite, as in *Dais*. The involucre as in *Dais*, but five-leaved.—Found by Thouin in the island of Madagascar.

It is difficult to ascertain the limits between *Dais* and *Gnidia*; as also between *Daphne* and *Passerina*ⁿ.]

PROPAGATION AND CULTURE.

These are usually increased by cuttings planted during the summer months in pots filled with light earth, plunged into a very moderate hot-bed, covering the pots closely with bell or hand-glasses to exclude the air, and shading them during the day. They will put out roots in six weeks, when they should be gradually inured to the open air. In winter place them in a dry airy glass-case, where they may enjoy free air in mild weather, and be protected from frost and damp air.

[GNIDIUM. See *Daphne*.

GOAT'S-BEARD. See *Tragopogon*.

———RUE. See *Galega*.

———THORN. See *Astragalus*.

GOLDEN-FLOWER. See *Chrysanthemum*.

———ROD. See *Solidago*.

———TREE. See *Bosea*.

GOLDLOCKS or GOLDYLOCKS. See *Chrysocoma* and *Gnaphalium*.

GOLD OF PLEASURE. See *Myagræum*.

GOMOZIA. See *Nerteria*.

GOMPHIA. (From γομφος, a nail, knob or button, the flowers being a roundish form before they open.)

Lin. gen. Schreb. n. 738. *Jabotapita*. *Plum.* 32.

Ochnæ. sp. ed. pr. Gært. t. 70 *Swartz prodr.* 67.

Class. 10. 1. Decandria Monogynia.

GENERIC CHARACTER.

CAL. *Peculiar* five-leaved: leaflets lanceolate, sharpish, nerved, coloured, deciduous; two with a membrane on both sides, one with a membrane on one side only, and two without any.

COR. *Petals* five, spreading, longer than the calyx, somewhat unequal: *claws* shorter than the calyx, widening gradually into roundish, flat, entire *laminae*.

STAM. *Filaments* ten, thick, angular, very short. *Anthers* upright, parallelopiped, drawn to a point at

^a Linn. syst. and mant.

^b Linn. mant.

^c Ibid.

^d Hort. kew.

^e Linn. syst.

^f Ibid.

^g Hort. kew.

^h Linn. syst.

ⁱ Ibid.

^j Hort. kew.

^k Ibid.

^l Linn. suppl.

^m Ibid.

top, gaping at the tip on the outside with a double hole, shorter than the calyx.

PIST. Germ fitting on a short, fleshy, angular receptacle, five-cornered and five-cleft. Style longer than the stamens, five-furrowed. Stigma sharp.

PER. Berries from one to five, generally two, ovate, obliquely attenuated at the base, somewhat compressed, obtuse, upright, fitting on a very large globular receptacle (for receiving a single berry) or lobed for several berries, each fixed to each lobe.

SEEDS solitary, ovate.

ESSENTIAL CHARACTER.

Cal. five-leaved. *Cor.* five-petalled. *Berries* two (one to five) on a large receptacle. *Seed* solitary.

SPECIES.

1. *Gomphia angustifolia*.

Vahl symb. 2. 49.

Meesia ferrata. *Gärtn. fruct.* 1. 344. t. 70.

Tsjocatti. *Rheed. mal.* 5. 95. t. 48.

Walkera. *Schreb. gen. n.* 378.

Leaves lanceolate, serrate on the outside, panicle terminating, petals longer than the calyx.

2. *Gomphia nitida*.

Vahl symb. 2. 49.

Ochna nitida. *Swartz prodr.* 67.

Leaves ovate-lanceolate, acuminate, serrate, panicles terminating, calyxes equal to the corolla.

3. *Gomphia laevigata*.

Vahl symb. 2. 49.

Leaves lanceolate, very obtuse, quite entire, emarginate, panicle terminating.

DESCRIPTIONS, &c.

1. This is very smooth. Leaves alternate, sessile, two inches long, quite entire from the base to the middle, acute at both ends, membranaceous, netted with very fine veins. Flowers in a panicle two inches long, before they unfold globular. Calycine leaflets roundish^a, permanent. Petals lanceolate. Filaments (ten *Vahl*) five, half the length of the petals. Style bristle-shaped, the length of the stamens. Berried drupes five, obovate, kidney-form, distant, erect, at first red, afterwards brown, somewhat wrinkled: pulp thin, drying to a coriaceous crust: shell the form of a drupe, somewhat bony, one-celled, valveless. Seeds solitary, kidney-form, softish to the touch^b.

This tree is only about twelve feet high, with a slender trunk; the bark is brownish red, the wood whitish, with a greenish heart. The flowers are yellow, and have no scent^c. Native of the East-Indies.

2. Branches alternate, flexuose at top, covered with a brown bark, round, smooth, as is the whole plant. Leaves on very short petioles, alternate, from two to three inches long, two inches broad, coriaceous, scarcely veined, very smooth and even, with mucronate serratures, but quite entire at the base. Panicle strict, spreading, a hand or more in length; partial peduncles and pedicels alternate; squarrose with the permanent pedicels after the flowers have fallen off. Flowers before their evolution ovate, obtuse. Calycine leaflets the length of the petals, lanceolate. Petals yellow. Filaments ten small tubercles. Anthers the length of the corolla, awl-shaped. Germ five-cornered. Style the length of the anthers. Stigma acute^d. Native of the West-Indies.

3. This also is very smooth. The branches are alternate, and covered with an ash-coloured bark. Leaves petioled, scattered, sharp at the base, very blunt at the top, two inches long, shining, veinless, subcoriaceous. Petiole very short, thickened at the insertion. Panicle like that of *Ochna squarrosa*; peduncles spreading very much, many of them a little bent in, purple. Calycine leaflets lanceolate. Corolla the length of the calyx. Berries placed on a receptacle.

Native of the East-Indies^e.]

^a Vahl.

^b Gartner.

^c Hort. malab.

^d Vahl.

^e Ibid.

GOMPHRENA (of Pliny: From γομφος, clavus; a nail, knob or button.)

Lin. gen. n. 314. *Reich. n.* 343. *Schreb. n.* 441.

Juss. 88. *Gärtn. t.* 128. *Amaranthoides.*

Tournef. t. 423. *Caraxeron.* *Vaill. mem. acad.* par. 1722.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Amaranthi*, *Juss. Miscellaneæ*, *Lin.*

GENERIC CHARACTER.

CAL. Perianth coloured; outer three-leaved: leaflets two, converging, keeled.

COR. five-petalled, upright: petals subulate, permanent, rude, villose.—Nectary, a cylindric tube, the length of the corolla; with a five-toothed, patulous mouth.

STAM. Filaments five, scarcely observable, within the mouth of the nectary. Anthers upright, closing the mouth of the nectary.

PIST. Germ ovate, with a point. Style cloven half way, filiform. Stigmas simple, the length of the stamens.

PER. Capsule roundish, circumcised.

SEED single, large, roundish, with an oblique tip.

OBS. What is here called the corolla is rather the calyx.

ESSENTIAL CHARACTER.

Cal. coloured, outer three-leaved, leaflets two, converging, keeled. *Pet.* rude, villose. *Nect.* cylindric, five-toothed. *Style* cloven half way. *Caps.* one-seeded.

SPECIES.

1. *Gomphrena globosa*. Annual Globe-Amaranth.

Lin. spec. 326. *Reich. 1.* 630. *hort. cliff.* 86.

upf. 57. *fl. zeyl. n.* 115. *Mill. fig. t.* 21.

Gärtn. fruct. 2. 216. *Lour. cochinch.* 175.

Amarantho affinis, &c. *Breyn. cent.* 109. t. 51.

Comm. hort. 1. t. 45.

Flos globosus. *Rumph. amb. 5.* t. 100. f. 2.

Wadapu. *Rheed. mal.* 10. 73. t. 37.

Stem upright, leaves ovate-lanceolate, heads solitary, peduncles two-leaved.

2. *Gomphrena perennis*. Perennial Globe-Amaranth.

Lin. spec. 326. *Reich.* 630. *Dill. elth.* 24. t. 20.

f. 22. (*Amaranthoides*).

Leaves lanceolate, heads two-leaved, florets separated by a proper perianth.

[3. *Gomphrena hispida*. Hairy Globe-Amaranth.

Lin. spec. 326. *Reich.* 630. *Rheed. mal.* 9. 141.

t. 72. (*Min-angani*).

Stem upright, heads two-leaved, leaves crenate.

4. *Gomphrena brasiliensis*. Brazilian Globe-Amaranth.

Lin. spec. 326. *Reich.* 630. *amoen.* 4. 310. *Breyn.*

cent. 111. t. 52. (*Amarantho affinis*).

Leaves ovate-oblong, stem upright, heads peduncled, globular, leafless.]

5. *Gomphrena ferrata*.

Lin. spec. 326. *Reich.* 631.

Stem upright, brachiate, heads solitary, terminating, sessile, calyxes serrate.

[6. *Gomphrena interrupta*.

Lin. spec. 326. *Reich.* 631. *Swartz. obs.* 108.

L'Herit. stirp. nov. 1. 5. t. 3.

Celosia procumbens. *Lin. syst.* 247. *Jacqu. misc.*

2. 344. *icon.* *Murr. comm. gott.* 1782. 16. t. 5.

Stem almost upright, spike interrupted.

7. *Gomphrena flava*.

Lin. spec. 326. *Reich.* 631. *hort. cliff.* 87.

Peduncles opposite, bifid, three-headed, middle head sessile.

8. *Gomphrena arborescens*.

Lin. syst. 265. *suppl.* 173.

Arborecent, hairy, somewhat twining.

9. *Gomphrena angustifolia*.

Vahl symb. 3. 45.

Leaves linear-lanceolate, smooth, heads terminating, oblong, subtriphyllous.]

DESCRIPTIONS, &c.

1. This is an annual plant, rising with an upright branching stalk, about two feet high. Leaves opposite, [sessile, quite entire, hispid.] Branches and peduncles also opposite; the latter axillary, long and naked, except that there are two short leaves close under each head of flowers. These heads at their first appearance are globular, but as they increase

crease in size become oval. [Calyx five-leaved, white-tomentose, involucre with three scales, two of which are very large, boat-shaped, keeled, coloured, converging. Corolla none, unless the tube of the stamens be reckoned as such. Filaments united into a conical tube, quite entire, except that it is five-toothed at top. Germ superior. Style single, bifid. Capsule roundish, compressed a little, membranaceous, semipellucid, one-celled, cut round above the middle, the upper valve shorter. Seed smooth, fulvous, inverted^a.

Native of India. It was cultivated in 1714 by the Dutchess of Beaufort^b; but was not common in the English gardens till 1725. It was raised first in Holland about 1670^c.] Mr. Miller says that he received seeds of the white sort from Holland in 1722. The flowering heads are beautiful, and if gathered before they are too far advanced, will retain their beauty several years. The seed ripens late in autumn, and the plant decays soon after.

There are two varieties, one with fine bright purple heads, the other has white or silvery heads, and these never alter from seeds, so that they are permanent varieties, though in other respects they do not differ: there is also one with mixed colours, but whether this arose accidentally from the seeds of either of the former, I cannot determine, for this variety continues from seeds, and the other two I have cultivated more than thirty years, and have never found either of them vary.

There are also two varieties of this which grow naturally in the West-Indies, one with purple, and the other with white heads, which are much smaller and rounder than those before-mentioned. The plants grow much larger, and spread more into branches, and they are later before they flower, so that in cold seasons the seeds rarely ripen in England; these are called Bachelors Buttons by the inhabitants of America.

[Loureiro also mentions a variety in Cochin-China, with white ovate heads, in which all the florets are fertile; whereas in the purple variety most of them are barren.]

2. Stems upright, hairy, slender. Leaves opposite, hairy, sessile. Heads of flowers terminating, small, spreading so that the calyxes appear distinct; they are of a pale straw-colour, and appear in July.

[It was cultivated in the Eltham garden before 1732, and was there raised from seeds brought from Buenos Ayres by Mr. Mylam^d.

3. Height a cubit and half. Stems quadrangular, jointed, woody, with longish white hairs on them, and having a pair of decussated branches at each joint. Leaves opposite at each joint, small, oblong and narrow, thin, soft, having a few hairs on them. Heads of flowers rounded-oblong, at first white, but becoming blue. Native of Malabar^e.

4. This is somewhat higher than the first sort; the heads are white, smaller, and composed of smaller calyxes, without any leaves at the base. Native of Brasil^f.]

5. Stems more slender and tall than those of the first, and growing irregularly. Leaves smaller, but of the same shape. Flowers in spikes at the ends of the branches, broken or divided into three or four parts, small, and of a pale purple colour. The seeds were sent by Dr. Houstoun from Campeachy: [and it was cultivated by Mr. Miller before 1733.

6. Root annual. Stem shrubby at bottom, from one to two feet high. Branches jointed, subdecumbent, lanuginose, white. Leaves at the root aggregate, sessile; above opposite, lanceolate, obtuse, tomentose, beneath white-lanuginose, soft. Flowering-stems leafless, stiff, whitish, except that they are often purple towards the end. Flowers in spikes, aggregate, sessile, interrupted, lanuginose. Scales two or three, membranaceous, minute, forming an involucre to the calyx, which is five-parted; the parts linear, erect, purple, woolly on the outside. Germ

large, compressed, woolly: style short: stigma subcapitate, yellow. Capsule largish, involved in the calyx, opening in two parts at top, woolly, compressed, crested at the edge. Native of dry sandy fields in the southern parts of Jamaica^g: and other parts of the West-Indies. Introduced into the Paris gardens by seeds sent from St. Domingo in 1778 by Jac. Rob. Crofnier^h: and into the Kew garden in 1784 by Monf. Thouinⁱ. See *Celosia procumbens*.

7. At each joint of the stem two opposite peduncles are produced, longer than the leaves, trifid at top, with one globular head of flowers at the end of each division, having no leaves immediately under them. Native of La Vera Cruz^k, where it was found by Houstoun.

8. Stem round, simple, hairy. Leaves opposite, on short petioles, oval, obtuse, leathery, quite entire, having hairs scattered over them. Several bractes under each flower, sharper than the leaves, and of the same length with the flower. Flowers aggregate, terminating, the size of a walnut. The florets sessile, very numerous. Calyx five-leaved: leaflets subulate, flat, woolly at bottom, an inch in length. Corollet cylindric, the length of the calyx. Germ superior, minute.—This is very different from its congeners; it is, however, a genuine species of this genus.—Found in New Granada, by Mutis^l.

9. Stem herbaceous, erect, four-cornered, with short hairs pressed close: branches opposite, quite simple, higher than the stem, subfiliform, two-leaved. Leaves sessile, narrow, attenuated, an inch and half long, with minute hairs pressed close, and visible only with a glass, pale green, quite entire. Peduncles terminating the branches, elongated. Heads first oblong, then cylindrical, obtuse; at the base of each, leaves usually three, very seldom two, of the same structure with the stem-leaves, longer than the heads. Calycine leaflets ovate, concave, mucronate; the keel subciliate. Petals five, lanceolate, concave, pubescent on the outside, and almost equal. Filaments connected at the base by means of a membrane. Germ oblong, smooth. Style single. Stigma simple.—It has the habit of Gomphrena, but differs in having a single style.—Native of the East-Indies, where it was found by Koenig^m.]

PROPAGATION AND CULTURE.

The first sort is a very ornamental plant in gardens, and is now very commonly cultivated in the English gardens. In Portugal, and other warm countries, it is cultivated to adorn their churches in the winter; for if the flowers are gathered when they are fully grown, and dried in the shade, they will retain their beauty a long time, especially if they are not exposed to the air; this plant is annual, and therefore is only propagated by seeds, which should be sown on a good hot-bed the beginning of March; but if the seeds are not taken out of their chaffy covering, it will be proper to soak them in water for twelve hours before they are sown, which will greatly facilitate their growing. When the plants are come up half an inch high, they should be transplanted on a fresh hot-bed, at about four inches distance, observing to shade them till they have taken root; then they should have fresh air admitted to them every day, in proportion to the warmth of the season; they will also require to be frequently refreshed with water. In about a month's time, if the hot-bed is of a proper warmth, the plants will have grown so large as nearly to meet, therefore they will require more room, otherwise they will draw up weak; then a fresh hot-bed should be prepared, into which there should be a sufficient number of three farthing pots plunged, filled with light rich earth, and when the bed is in a proper temperature of warmth, the plants should be carefully taken up with balls of earth to their roots, and

^a Gartner.
^d Dill. elth.

^b Hort. kew.
^e Hort. malab.

^c Mill. fig.
^f Breynius.

^g Swartz.
^k Linn. hort. cliff.

^h L'Heritier.
^l Linn. suppl.

ⁱ Hort. kew.
^m Vahl.

each planted into a separate pot, observing to shade them till they have taken new root, afterward they must be treated in the same manner as other tender exotic plants. When the plants have filled these pots with their roots, they should be shaken out of the pots, and their roots on the outside of the ball of earth must be carefully pared off; then they should be put into pots a size larger, and when there is conveniency of a deep frame, to plunge the pots into another gentle hot-bed, it will bring the plants early to flower, and cause them to grow much larger than those which are placed abroad. In July the plants should be inured gradually to bear the open air, into which they may be removed about the middle of that month, and intermixed with other annual plants to adorn the pleasure-garden; but it will be proper to keep a plant or two of each sort in shelter for seeds, because when the autumn proves cold or wet, those plants which are exposed abroad, seldom produce good seeds.

5. The plants of this sort will live two or three years in a stove; and the seeds will sometimes ripen in England.

GOMPHRENA. See *Illecebrum*.

[GONATOCARPUS. (From *gonu*, γονος the knee, and *καρπος* fruit.)

Lin. gen. Schreb. n. 214. Gonocarpus. Thunb. nov. gen. 55. fl. jap. 5. Juss. 442.

Class. 4. 1. Tetrandria Monogynia.

GENERIC CHARACTER.

CAL. none.

COR. four-cleft, permanent.

STAM. Filaments four, inserted into the corolla.

PIST. Germ inferior. Style single.

PER. Drupe subglobular, eight-cornered, crowned with the permanent corolla, one-celled.

SEED single.

ESSENTIAL CHARACTER.

Cor. four-cleft. Drupe eight-cornered, one-seeded.

SPECIES.

1. *Gonatocarpus micranthus*.

Lin. syst. 164. Thunb. diff. 3. 55. fl. jap. 69. t. 15.

DESCRIPTION, &c.

Root fibrous, annual. Stem one or more, four-cornered, decumbent at the base, branched at top, scarcely a span in height. Leaves opposite, on very short petioles, ovate, acute, serrate, smooth, spreading, a line in length. Flowers on the branches in spikes, remote, mostly on one side, drooping, minute. Found by Thunberg abundantly about Nagasaki, flowering in August^a.

GOODENIA. (So named by Dr. Smith, president of the Linnean Society, from the Rev. and learned Samuel Goodenough, L.L.D. F.R.S. Treasurer of the Linnean Society, author of observations on the British species of *Carex*, &c.)

Lin. trans. 2. 346. Smith bot. nov. holl. 15. t. 5.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Campanulaceæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets equal, awl-shaped, erect, permanent.

COR. one-petalled, superior: tube cloven on the upper side from top to bottom: limb five-cleft; segments equal, obovate, directed forwards.

STAM. Filaments five, shorter than the tube, and projecting through its fissure. Anthers linear, vertical, two-celled.

PIST. Germ inferior, five-angled. Style simple, longer than the stamens, and standing out with them. Stigma cup-shaped, ciliated.

PER. Capsule two-celled, two-valved; bursting at top, and becoming revolute; the partition, which is parallel to them, remaining erect.

SEEDS several in each cell, imbricated, lenticular.

ESSENTIAL CHARACTER.

Cor. longitudinally cloven on the upper side, exposing the organs of fructification; border five-cleft, leaning one way. Anthers linear. Stigma

^a Thunb. jap. & gen.

cup-shaped, ciliated. Caps. two-celled, two-valved, with a parallel partition. Seeds many, imbricated.

SPECIES.

1. *Goodenia ovata*. Ovate yellow *Goodenia*.

Smith in Linn. trans. 2. 347.

Leaves ovate, toothletted-serrate, both they and the corollas smooth, fruit linear.

2. *Goodenia albida*. White-flowered *Goodenia*.

Smith in Linn. trans. 2. 348.

Leaves obovate, toothed, both they and the corollas smooth, style and stem hairy.

3. *Goodenia paniculata*. Panicked yellow *Goodenia*.

Smith in Linn. trans. 2. 348.

Leaves obovate-lanceolate, toothed, both they and the corollas hairy, stem almost naked, panicked.

4. *Goodenia bellidifolia*. Daisy-leaved yellow *Goodenia*.

Smith in Linn. trans. 2. 349.

Leaves obovate, toothletted, fleshy, stem almost naked, spiked, corolla hirsute on the outside, fruit four-valved.

5. *Goodenia stricta*. Rigid blue *Goodenia*.

Smith in Linn. trans. 2. 349.

Leaves lanceolate, entire or toothed, fleshy, smooth, corolla hirsute on the outside, stigma contracted at the mouth.

6. *Goodenia ramosissima*. Branching blue *Goodenia*.

Smith in Linn. trans. 2. 349. bot. nov. holl. 15. t. 5.

Leaves linear-lanceolate, somewhat toothed, both they and the stem hispid, style very hirsute at top, corolla hairy on the outside.

7. *Goodenia heterophylla*. Various-leaved *Goodenia*.

Smith in Linn. trans. 2. 349.

Leaves entire, toothed or lobed, hairy, fruit roundish, corolla almost naked.

8. *Goodenia hederacea*. Trailing *Goodenia*.

Smith in Linn. trans. 2. 349.

Leaves roundish, entire or five-lobed, corolla woolly on the outside, stem prostrate.

9. *Goodenia lævigata*.

Curt. magaz. 287.

Leaves ovate-lanceolate, toothed, smooth.

DESCRIPTIONS, &c.

This genus should be inserted between *Scævola* and *Cinchona* in the Linnean system, and between *Cyphia* and *Scævola* in that of Mons. de Jussieu. It differs essentially from *Scævola* in its fruit; from *Cyphia* in its corolla, and from *Lobelia* in its stamens.

Dr. Smith has given this new and most distinct genus the name of *Goodenia*, in honour of his worthy friend the Rev. Dr. Goodenough. In the construction of this name he has followed the example of Tournefort, in forming *Gundelia* from *Gundelcheimer*. Dr. Goodenough's name might however have been softened into *Goodenovia*, without being either too long, or offending a delicate ear.

These plants are all natives of New South Wales, about Port Jackson.

1. Stem shrubby, erect, angular, branched, leafy. Leaves alternate, varying a little in breadth, acute, serrated with fine sharp spreading unequal teeth, of a bright green, veiny, smooth on both sides, paler beneath: footstalks channelled above, with a tuft of down in their axils. Stipules none. Flowers yellow, from three to five in a dichotomous panicle, arising solitary from each axil of the uppermost leaves, and above half as long as the corresponding leaf: peduncles somewhat angular, smooth, with two awl-shaped bractes at each subdivision. Calycine leaflets smooth. Corolla tubular: tube smooth, greenish and striated externally; limb yellow, membranous, with a thick greenish plait running from the tube to the point of each segment behind. Filaments inserted into the receptacle, equal, perfectly distinct. Germ long, slender, smooth: style smooth: stigma large, bent down towards the stamens, finely ciliated. Capsule oblong, crowned with the calyx. Seeds roughish, encircled with a groove.

This

This plant is in the garden of the Duke of Northumberland at Sion, and was presented in flower on the 4th of december, 1792, to the Linnean Society by Mr. Thomas Hoy, one of the fellows.

2. Gathered by John White, Esq. Surgeon at Port Jackson.

3. Gathered at the same place by Mr. David Burton.

4. Found at the same place by John White, Esq.

5. This grows naturally in marshy ground at Port Jackson, flowering there in october, and was found by the same gentleman^a.

6. Stem herbaceous, two or three feet high, much branched and straggling, round, rough with short stiff hairs, as are also the leaves. The latter are of a narrow lanceolate form, mostly entire, but sometimes toothed, and even sinuated. Stipules none. Flowers solitary, terminating the branches, and appearing in october. The plaits of the corolla are externally hairy. The anthers are very minutely bearded. The style is very hairy in its upper part. The germ is oval and hairy^b. Found by John White, Esq. at Port Jackson.

7, 8. Natives of the same place, and found by the same gentleman. We do not yet know the colour of their flowers^c.

9. Stems round, smooth, green below, purplish above. Leaves alternate, on footstalks gradually widening into them, somewhat ovate, deeply toothed, of a full bright green. Flowers axillary, forming a thin spike, sessile, pale violet, having a peculiar, rather unpleasant smell; at the side of each flower two long narrow bractes. Calycine leaflets short, ovate, appearing edged with hairs when magnified. The lower part of the corolla, which at first is tubular, splits longitudinally above, and forms a kind of half tube, the edges of which are brown, the inside yellow, the outside greenish, the mouth beset with short hairs, each of which is terminated by a small villose head: the segments of the limb or border are linear, spread out like a hand, and are terminated by short points. Filaments whitish, somewhat broader above, rather flat, inserted into the receptacle. Anthers oval, flattened, yellow, a little bent, and the length of the pistil when the flowers are not yet fully expanded; afterwards they are much shorter than the pistil, and appear withered. The style, in flowers about to open, is about the length of the filaments, and upright; afterwards it is much longer, and bent somewhat downward. Stigma at first upright, in form of a cup, having the edge curiously fringed with white hairs; afterwards it closes together, loses its hollow, assumes a flat appearance, and nods a little; the back part of it is bearded. Germ oblong, usually abortive with us.

Raised by Mr. Curtis in the summer of 1793 from seeds brought over in specimens of earths from Botany-Bay by Captain Tench to Samuel Tolfrey, Esq. It flowers from july to october^d.

PROPAGATION AND CULTURE.

These plants must be raised from seeds brought from their native country. When once obtained, they may readily be increased from cuttings. They are not very tender, but may be preserved in the dry stove, or a good glass case.

GOOD HENRY. See *Chenopodium*.

GOOSEBERRY. See *Ribes*.

GOOSE-FOOT. See *Chenopodium*.

GOOSE-GRASS. See *Galium Aparine*.

GREAT. See *Asperugo*.

GOOSE-TONGUE. See *Achillea*.

GORDONIA. (So named from Mr. James Gordon, an eminent Nursery-man at Mile-end near London: no less famous for introducing many rare plants than successful in cultivating them.)

Lin. gen. Reich. n. 913. Schreb. n. 1144. Ellis in phil. trans. 1770. t. 11. Cavanill. diff. 307. Walter carolin. 177. Juss. 275. Franklinia. Marsh. arb. 48.

^a Smith in Linn. trans.

^b Smith in bot. New Holl.

^c Smith in Linn. trans.

^d Curtis.

Class. 16. 6. Monadelphia Polyandria. (Polyandria, Monogynia.)

Nat. order of *Columniferae*.—*Malvaceae*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* (double: outer four-leaved, deciduous; Cavan.) inner five-leaved: leaflets roundish, concave (ciliate W.) permanent.

COR. *Petals* five, obovate, concave, large, united at the base (one of them ciliate. W.)

STAM. *Filaments* numerous, filiform, coalescing at the base into an obtuse body (campanulate, with a five-cleft border. W.) *Anthers* oval, upright.

PIST. *Germ* ovate. *Style* short, five-cornered (cylindric. W.) *Stigmas* five, sharp, horizontal. (Stigma five-cornered. W.)

PER. *Capsule* ovate, sharp, five-celled: cells bifid half way, five-valved.

SEEDS two, with a leafy wing on one side.—(Seeds in two rows in each cell. L'Herit.)

ESSENTIAL CHARACTER.

Cal. five-leaved. Pet. five, united at the base by means of the nectary. Filam. inserted into the nectary. Caps. superior, five-celled. Seeds winged.

SPECIES.

1. *Gordonia Lasianthus*. Smooth Loblolly Bay.

Lin. syst. 631. Reich. 3. 368. mant. 570. Ellis in Philos. transact. 1770. vol. 60. p. 518. t. 11.

L'Herit. fl. nov. 156. Swartz obs. 271.

Hypericum Lasianthus. Lin. spec. 1101. hort. cliff. 380.

Hibiscus 24. Mill. dict. edit. 7.

Alcea floridana, &c. Pluk. amaltb. t. 352. f. 3.

Catesb. car. 1. t. 44. Amman. arb. 7. t. 352. f. 3.

Leaves leathery, smooth on both sides, flowers peduncled.

2. *Gordonia pubescens*. Pubescent Loblolly Bay.

Lamarck encycl. 2. 770. Cavan. diff. 6. 308. t. 162. Ait. hort. kew. 2. 231.

Leaves pubescent beneath, flowers subsessile.

3. *Gordonia Franklini*.

L'Herit. fl. nov. 156.

Franklinia Alatomaha. Marsh. arbut. 49. Bartr. trav. 16 & 467.

Leaves smooth, flowers sessile, fruits globular.

DESCRIPTIONS, &c.

Shrubs, with flowers solitary from the axils. In habit they differ somewhat from the Malvaceous tribe, and they have no stipules, but the corcle or heart of the seed is furnished with corrugated lobes^e. The filaments not being united at bottom, but only inserted into the nectary, these shrubs do not properly belong to the class Monadelphia, but to that of Polyandria.

1. Catesby describes the Loblolly Bay as a tall and very straight tree, with a regular pyramidal head, and adds that the leaves are shaped like those of the common Bay, but are serrated. Swartz says it is a low tree, with a white, soft, brittle wood; the leaves ovate-lanceolate, flat, somewhat leathery, of a dusky green colour. According to Mr. Miller, the stem is five or six feet high, and branched; the leaves four inches long, and one inch and a half broad in the middle, slightly indented on their edges, and of a thick consistence; the flowers axillary, on very long peduncles; the petals are yellow and thick; the stamens are joined at their base to the style, and form a short column, but spread open at top, filling the mouth of the tube^f.

Calyx tomentose, villose at the edge. Stamens scarcely longer than the calyx^g.

Native of North America. Introduced about 1768, by Benjamin Bewick, Esq. It flowers in august and september^h.

Dr. Dale sent seeds of it to Mr. Miller from South Carolina, and he raised plants from them.

2. Branches subpubescent. Leaves as in the foregoing, but with the lower surface very softly tomentose. Flowers axillary, solitary, sessile towards

^e Jussieu.

^f Dict. edit. 7.

^g Linn. spec.

^h Hort. kew.

the tops of the branches. Leaflets of the outer calyx subovate, acuminate at the tip, tomentose, as are also those of the inner¹.

Native of South Carolina. Introduced in 1774, by Mr. William Malcolm. It flowers in September^k.

It has been long in the open air in the garden at Trianon in France; but, like the rest of the trees and shrubs from South Carolina, not very patient of cold. The flowers are white, but they come out so late, that the frost destroys them before they expand^l.

3. This beautiful tree-like shrub rises with an erect trunk to the height of about twenty feet, with alternate branches. Leaves oblong, narrowed towards the base, ferrate, alternate, sessile or subsessile. Flowers towards the extremity of the branches, solitary, sitting close in the bosom of the leaves, often five inches in diameter when fully expanded; petals snow-white, the lower one hollow, formed like a cap or helmet, entirely including the other four, until the moment of expansion; its exterior surface is covered with a short silky hair; the borders of the petals are curled or plaited. Fruit a large, round, dry, woody pericarp, opening at each end oppositely by five alternate fissures, containing ten cells, each filled with dry woody cuneiform seeds^m. Capsules umbilicate, with the partitions in the middle of the valves. Seeds very many, lying over each other in two rows, in each cell, obscurely cornered, somewhat like those of the Cypress, slightly edged at the corners.

Native of South Carolina and Georgia. Not having yet flowered in Europe, it is doubtful whether this species belongs to the genus *Gordonia* or *Stuartia*. As far as can be judged from specimens, it rather appertains to the latter. It has the habit and calyx of the former, but the insertion of the stamens, and manner of flowering, are the same as in *Stuartia*; the capsule also agrees rather with the latter, but the seeds are in two rows, edged however at the corners, not winged as in *Gordonia*ⁿ.

The flowers have the fragrance of a China Orange. It was first observed by Mr. John Bartram on the Altamaha river in Georgia, in the year 1760; and was brought into Pennsylvania fifteen years after, by his son William Bartram^o.]

PROPAGATION AND CULTURE.

The Loblolly Bay growing naturally in water, is not kept alive in this country without difficulty. Mr. Miller raised several plants, which continued till winter, but not one of them survived, though he placed some of them in the stove, and supplied them well with water.

GORTERIA. (So named in honour of David de Gorter, author of *Flora Zutphanica & Ingrica*.)

Lin. gen. n. 982. *Reich.* 1064. *Schreb.* 1328. *Juss.* 182. *Gärtn.* t. 171.

Class. 19. 3. Syngenesia Polygamia Frustranea.

Nat. order of Compositæ Capitatae.—*Corymbiferae*, *Juss.*

GENERIC CHARACTER.

CAL. Common one-leafed, imbricate with spiny scales, the inner ones gradually longer, straight, bristle-shaped, rigid.

COR. Compound radiate. Corollæ hermaphrodite, several in the disk—female fewer in the ray.—Proper of the hermaphrodite funnel-form; five-cleft—of the female ligulate, lanceolate.

STAM. in the hermaphrodites, filaments five, short. Anther cylindric, tubular.

PIST. of the hermaphrodites, germ villose; style filiform, the length of the corollet; stigma bifid.—of the females, germ obsolete; style none; stigma none.

PER. Calyx unchanged, deciduous.

SEEDS in the hermaphrodites, solitary, roundish; down simple (woolly, *Juss.*)—in the females, none.

REC. naked. (Not so in all the species: see n. 1, 3.)

¹ Cavanilles.

^k Hort. kew.

^l L'Heritier.

^m Marshall & Bartram.

ⁿ L'Heritier.

^o Marshall.

ESSENTIAL CHARACTER.

Cal. imbricate, with spiny scales. *Cor.* of the ray ligulate. Down woolly. Recept. naked.

SPECIES.

[1. *Gorteria personata.* Annual *Gorteria*.

Lin. spec. 1283. *Reich.* 3. 893. *Berg. cap.* 300.

Pluk. phyt. t. 273. f. 6. (*Carduus*.) *Barrel.*

ic. t. 160. (*Jacea*.) *Gärtn. fruct.* 2. 427.

Leaves lanceolate, entire and sinuate, stem upright, flowers peduncled.]

2. *Gorteria rigens.* Great-flowered *Gorteria*.

Lin. spec. 1284. *Reich.* 3. 894. *amoen.* 6. 105.

Berg. cap. 304. *Curtis magaz.* t. 90. *Mill.*

fig. t. 49. (*Arctotis*.) *Vaill. aët. par.* 1728.

n. 9. (*Arctotheca*.) *Raii suppl.* 182. n. 3.

(*Anemonospermus*.)

Leaves lanceolate, pinnatifid, stem depressed, scapes one-flowered.

[3. *Gorteria echinata.* Prickly *Gorteria*.

Ait. hort. kew. 3. 254.

Leaves oblong, sinuate-gashed, with small thorns; stems ascending, receptacles chaffy.

4. *Gorteria squarrosa.* Cobweb *Gorteria*.

Lin. spec. 1284. *Juss.* 783. *Reich.* 894. *mant.*

470. *amoen.* 6. 105. *Berg. cap.* 301. *Comm.*

hort. 2. 55. t. 28. (*Aster*).—*Lin. spec. edit.*

1. 859. (*Xeranthemum*.)

Leaves lanceolate, decurrent, adnate, ciliate-spinulous, flowers sessile.

5. *Gorteria setosa.* Bristly *Gorteria*.

Lin. Juss. 783. *mant.* 287. *Reich.* 894. *Lour.*

cochin. 507.

Leaves lanceolate, decurrent, adnate, ciliate-spinous, flowers terminating.

6. *Gorteria ciliaris.* Ciliate *Gorteria*.

Lin. spec. 1284. *Reich.* 895. *Burm. afr.* 151.

t. 54. f. 1. (*Carlina*.) *Raii suppl.* 196. 4.

(*Carduus*.) *Pluk. amalb.* t. 354. f. 3. *Seba*

mus. 1. t. 23. f. 1. (*Aculeosa*.)

Leaves imbricate, ciliate, in two rows; the outer ciliae and the terminating spine reflex.]

7. *Gorteria fruticosa.* Shrubby *Gorteria*.

Lin. spec. 1284. *Ait. hort. kew.* 3. 255.

G. Asteroides. *Lin. Juss.* 783. *suppl.* 381.

Leaves lanceolate, entire, tooth-spinous, tomentose beneath, stem shrubby.

[8. *Gorteria herbacea.* Herbaceous *Gorteria*.

Lin. Juss. 784. *suppl.* 381.

Rohria Cynaroides. *Vahl in aët. Hafn.* 1. 2. p. 16. t. 8.

Stem-leaves clasping, ciliate, root-leaves unarmed, villose underneath.

9. *Gorteria hispida.* Hairy *Gorteria*.

Lin. Juss. 784. *suppl.* 381.

Leaves oblong, ciliate-spinous, upright, smooth, calyxes entire, ending in a thorn.

10. *Gorteria spinosa.* Thorny *Gorteria*.

Lin. Juss. 784. *suppl.* 381.

Rohria obovata. *Vahl in aët. Hafn.* 3. 1. p. 106.

Leaves oblong, sessile, tooth-spinous, spreading, smooth, calyxes ciliate-spinous, flowers upright.

11. *Gorteria cernua.* Drooping *Gorteria*.

Lin. Juss. 784. *suppl.* 382.

Leaves oblong, clasping, tooth-spinous, spreading, smooth, calyxes ciliate-ferrate, flowers drooping.

12. *Gorteria uniflora.* One-flowered *Gorteria*.

Lin. Juss. 784. *suppl.* 382.

Leaves lanceolate, undivided, tomentose underneath, stems one-flowered, depressed.

13. *Gorteria barbata.* Bearded *Gorteria*.

Lin. Juss. 784. *suppl.* 382.

G. fruticosa. *Berg. cap.* 302.

Leaves elliptic-lanceolate, tooth-awned, calyxes peduncled, ciliate-setaceous.

DESCRIPTIONS, &c.

These are mostly shrubby plants from the Cape of Good Hope. The first and third are herbaceous and annual.—The flowers are terminating. Jussieu thinks it probable that on farther examination it will be found that several species are placed in this genus that do not belong to it. He doubts whether *G. rigens* is not more nearly related to the genus *Arnica*. —Gärtner

—Gærtner also is of opinion, that the Linnean genus comprehends several plants that are foreign to it.

1. Stems a span high, little branched, roundish, hairy. Leaves alternate, narrow-lanceolate, sessile, hispid, white-tomentose underneath; the larger ones usually cut with two deep gashes on each side. Calyxes terminating, ovate; scales mucronate, the points straight, stiff, but hardly to be called prickly. Ray yellow, at the base and underneath blue^a.—Receptacle bristly, rough in the middle, excavated in the circumference. Florets in the centre male; in the disk androgynous, and of these not more than five fertile; in the ray female or neuter, and barren. Seeds woolly, but without down or feather.—When the flower comes to maturity, the aperture of the calyx being very narrow, the seeds do not fall out, but the whole drops together. Hence, when one of them germinates, the radicle not only perforates the bottom of the calyx, but is so firmly united to it, that the young plant bears the maternal calyx permanent above the root. There is no other instance of this economy, except in *Neurada*^b.

Introduced 1774, by Mr. Francis Masson. It flowers in July and August^c.]

2. This is a low spreading plant, with woody stalks six or eight inches long, trailing on the ground, having two or three side branches, each terminating in a close head of leaves, which are narrow, green on their upper, but silvery on their under surface, and cut into three or five segments at the end. The peduncles arise from these heads, are six inches long, naked, and support one large orange-coloured flower: each floret in the ray has a dark mark towards the base, with white intermixed. It flowers in May and June.

[The green-house can scarcely boast a more showy plant. The flowers, when expanded by the heat of the sun, and it is only when the sun shines on them that they are fully expanded, exhibit an unrivalled brilliancy of appearance^d. Mr. Miller cultivated it in 1755^e. He received it from Adrian van Royen, professor of Botany at Leyden, and distributed it to many curious persons in England^f.

3. Stems a foot high, angular, red, commonly smooth, but sometimes lanuginous here and there. Leaves scattered, sessile, clasping, subdecurent, smooth, but here and there lanuginous. Flowers terminating, solitary: outer scales of the calyx, short, palmate-spinous; inner longer, lanceolate, ending in a thorn, and armed with spinules at the base on each side. Corollets of the ray wholly barren, the petal four-cleft at the end, an inch long, spreading, yellow, but near the tip underneath of a dirty purple colour. Corollets of the disk yellow. Seeds obovate. Receptacle chaffy; chaffs long, slightly connate, net-wise. Native of the Cape of Good Hope. Mr. Fr. Masson. Introduced 1774. It flowers in July^g.

4. Stem proliferous, villose. Branches from the base of the stalk. Leaves as it were glued together at the base, bowed back, imbricate downwards, ending in a thorn, ciliated with three or four spinules on each side. Calyx terminating, squarrose, with leaflets bowed back, like those on the stem. Ray of the flowers yellow^h.

Introduced in 1786, by Baron Hake. It flowers from June to Augustⁱ.

5. Stem five feet high, upright, very much branched. Branches alternate. Leaves glued together at the base, bowed back, distant, with three bristle-shaped spines on each side, and one at the end. Flowers yellow, the ray violet-coloured underneath.—It differs from the foregoing, in the stem being neither villose nor proliferous; the leaves not imbricate downwards, but broader, shorter, with yellow bristles standing out on the edge; the flowers

peduncled, not sessile, and finally in the colour of the ray beneath^k.—Native of the Cape and of China.

6. The leaves are imbricate, and pressed to the stalks, so as to cover them in an extraordinary manner^l.

Introduced in 1774, by Masson. It flowers in May and June^m.]

7. Stem slender, three feet high, sending out a few weak branches, [which are tomentose and white. Leaves like those of Privet, alternate, sharp, petioled, having six or seven serratures bristly at the end. Flowers terminating, subsolitary, peduncled, the peduncle longer than the flower. Calyx many-leaved, in two rows; the inner a little smaller: leaflets lanceolate, having a thorn at the end, not ferrate; ciliate, with five or six stiffish bristles on each side, much shorter than the leaflet. Corolla yellow, radiate: the ray has many flowers, and is twice the length of the calyx; the disk is convex, the segments of the florets linear. Seeds villose. Crown of the seeds star-form, with many leafletsⁿ.—Cultivated in 1739, by Mr. Miller. It flowers in August and September.—This is entirely different from the *G. fruticosa* of Bergius (cap. 302.), which is *Atractylis oppositifolia*. *Lin. syst.*^o

8. Stem scarcely a foot high, herbaceous, smooth, very little branched. Root-leaves broad-lanceolate, petioled, quite entire, bluntish: stem-leaves alternate, cordate, acute, the upper ones gradually shorter. Flowers terminating, sessile. Calyx like that of an Artichoke, but scarcely bigger than a plum, imbricate, smooth at the edge, thorny at the end, straight.

9. Shrubby and large.

10. Both these were found at the Cape by Thunberg.

11. The base of the calyx is singular, with ripe seeds, and resembles the fruit of *Medicago*^p.—Introduced 1785, by Baron Hake. It flowers in May^q.

12. Stems a span high, simple, herbaceous, leafy on all sides. Leaves alternate, sessile. Peduncle terminating, longer than the leaves. Ray of the flower yellow. It has the appearance of *G. rigens*, and may perhaps be a variety of it.

13. Stems diffused, simple, white-tomentose. Leaves opposite or alternate, sessile, acute, smooth, marked with lines, awned at the end on both sides with four or five lateral teeth, white-tomentose underneath. Peduncle terminating, very long, leafless, putting off a white nap, one-flowered. The outer order of leaflets in the calyx is of the same form with the leaves; the inner is coloured, more copious, narrower, and ends in abundance of bristles that are twice as long as the flower^r.]

PROPAGATION AND CULTURE.

Most of these plants may be increased by cuttings, planted in a shady border, during any of the summer months; afterwards they may be treated like other plants from the Cape. For this see *Arctotis*. [The two annual sorts must be propagated by seeds.]

7. The seventh sort is increased by planting the small heads at the end of the branches, in June and July: these must be closely covered with either bell or hand-glasses, and carefully screened from the sun. When they are well rooted, they should be put each into a small pot, and in winter placed in an airy glass case secure from damp.—[This may serve as a direction for any other sorts, and indeed for most shrubby plants, that will not take from cuttings in the ordinary way.

GORTERIA. See *Atractylis* and *Robria*.

GORZ. See *Ulex*.]

^a Linn. mant. & syst.

^b Hort. kew.

^c Hort. kew.

^d Hort. kew.

^e Linn. spec.

^f Linn. suppl.

^g Linn. suppl.

^h Linn. suppl.

ⁱ Linn. suppl.

^j Linn. spec.

^k Gærtner.

^l Hort. kew.

^m Curtis.

ⁿ Hort. kew.

^o Mill. fig.

^p Hort. kew.

^q Hort. kew.

^r Linn. mant. & syst.

^s Hort. kew.

GÖSSYPIUM. (*Vossius is of opinion that this is an Egyptian word; it is called ἑλὼν in Greek. See Pliny, l. 19. c. 1.*)

Engl. Cotton. Fr. Coton.

Lin. gen. n. 845. Reich. 910. Schreb. 1138.

Cavanill. diff. 6. 309. Juss. 274. Gærtn. t. 134.

Xylon. Tournef. 27.

Class. 16. 6. Monadelphia Polyandria.

Nat. order of Columnifera. Malvaceæ Juss.

GENERIC CHARACTER.

CAL. Perianth double: outer one-leafed, trifid, flat, larger; inner one-leafed, bluntly emarginate in five rows, cup-form.

COR. Petals five, obcordate, flat, spreading, fastened by their base to the tube of the stamens.

STAM. Filaments numerous, uniting at bottom into a tube, separate at and below the tip, lax, inserted into the corolla. Anthers kidney-form.

PIST. Germ roundish. Style columnar, the length of the stamens. Stigmas three or four, thickish.

PER. Capsule roundish, acuminate, three or four-celled: partitions contrary.

SEEDS very many, oval, involved in cotton.

ESSENTIAL CHARACTER.

Cal. double; outer trifid. Caps. four-celled. Seeds wrapped in cotton.

SPECIES.

1. *Gossypium herbaceum.* Common Cotton.

Lin. spec. 975. Reich. 3. 355. hort. ups. 203.

mat. med. 167. Murr. prodr. 170. Blackw.

t. 354. Lour. cochinch. 415. Thunb. jap. 271.

G. frutescens, femine albo. Bauh. pin. 430.

Gossypium. Camer. epit. 203. Rumph. amb. 4. 33.

t. 12.—f. Xylon. Ger. 753. emac. 901.—frutes-

cens annuum. Park. theat. 1553. n. 2. t. 1552.

f. 2.

Xylon f. *G. herbaceum.* Bauh. hist. i. 343. Raii

hist. 1064.

Leaves five-lobed without glands underneath, stem herbaceous.

2. *Gossypium arboreum.* Tree Cotton.

Lin. spec. 975. syst. 628. Reich. 3. 356. hort.

cliff. 350. Gron. orient. 208. Forsk. ægypt. 125.

Lour. cochinch. 416.

G. arboreum caule lævi. Bauh. pin. 430.

Cudupariti. Rheed. mal. 1. 55. t. 31. Raii hist.

1065. 4.

Leaves palmate, with lanceolate lobes; stem shrubby.

3. *Gossypium hirsutum.*

Lin. spec. 975. syst. 628. Reich. 3. 356. Swartz

obs. 265. Brown. jam. 282. 1. Sabb. hort. 1.

t. 57. Pluk. alm. t. 299. f. 1.

Leaves five-lobed with one gland underneath, the twigs and petioles pubescent.

[4. *Gossypium religiosum.* Spotted-bark Cotton Tree.

Lin. syst. 628. Reich. 3. 356. Pluk. alm. t. 188.

f. 2? Gærtn. fruct. 2. 246. Swartz obs. 267.

G. arboreum. Merian surin. t. 10.

Leaves three-lobed acute with one gland underneath, twigs spotted with black.

5. *Gossypium latifolium.*

Lin. syst. 628. Murr. comm. gott. 1776. p. 22. t. 1.

Leaves acute, the lowest undivided, the rest three-lobed with one gland underneath.]

6. *Gossypium barbadense.* Barbadoes Cotton Tree.

Lin. spec. 975. Reich. 3. 357. hort. ups. 204.

Swartz obs. 266. Pluk. alm. t. 188. f. 1.

Leaves three-lobed quite entire with three glands underneath.

DESCRIPTIONS, &c.

[1. Root tapering, woody with numerous fibres, annual. Seed-lobes two, kidney-form, terminating gradually in a long petiole with the figure of a halved funnel. Stem three feet high, upright, round, pubescent, as is the whole of the herb, at bottom brown with slight chinks, at top spotted with black: branches axillary, scarcely longer than the leaf at their origin. Leaves alternate, only half the length of the petiole, tomentose, odorous whilst young. Petioles round, tomentose, bent in towards the insertion of the leaf, at the base gibbous and thicker, spreading. Stipules two, lanceolate, at the base of

the petioles and peduncles. Peduncles shorter than the petioles, branched. Calyx outer, when closed, three-cornered; when open, three-parted almost to the base; segments heart-shaped, gashed, shorter by half than the corolla, dotted with black: inner cylindrical, only one-third of the others length; upright, five-parted, with short blunt segments, dotted like the inner. Corolla monopetalous, with a very short tube, and a five-parted, spreading border; the segments blunt, crenate at the side, pale yellow with five red spots at bottom, and deciduous. Filaments coalescing into a pyramid. Germ. superior ovate: style filiform: stigma fourfold. Capsule bluntly three-cornered, three-valved, three-celled. Seeds ovate, about three in each cell, convex on one side, more flat on the other, immersed in fine cotton^a.]

This is the common Levant Cotton, which is cultivated also in several islands of the Archipelago; and in Malta, Sicily, and the kingdom of Naples, as well as in most parts of Asia.

[It is a native of the East Indies: and was cultivated here by Gerard, as a garden plant, in 1594^b. "It groweth (says he) about Tripolis and Alepo in Syria, from whence the factor of a worshipfull merchant in London, Master Nicholas Lete, did send unto his said master divers pounds weight of the seed, whereof some were committed to the earth at the impression hereof (1597): the success we leave to the Lord. Notwithstanding myself three years past did sow of the seeds, which did grow very frankly, but perished before it came to perfection, by reason of the cold frosts that overtook it in the time of flowering."

Few plants are more useful, since it furnishes materials for clothing in the four quarters of the world, particularly to the Asiatics. The seeds also are an article of food, and esteemed wholesome.

2. Stem eight feet high, the thickness of the human leg, with a rugged brown bark, and long, diffused, twisted branches. Leaves three or five-lobed, without glands, smooth, scattered, petioled; the lobes short. Flowers entirely yellow, terminating, solitary. Outer calyx three-leaved, large, gashed, erect: the inner calyx five-notched. Capsule commonly three-cornered, three-valved, three-celled, subovate, acuminate, rugged^c.—Between the sinuses of the leaves there is frequently a small segment; hence all the sinuses are obtuse^d.

Native of the East Indies, and the eastern coast of Africa. Cultivated in 1731, by Mr. Miller^e.

3. Stem shrubby, a fathom in height, erect, striated. Branches hirsute. Leaves alternate; the upper ones undivided, cordate, acute, entire, rough with hairs about the edge; the lower three-lobed, the lobes little divided, ovate, acute, entire, hirsute beneath, smooth above. Petioles round, striated, dotted with black, hirsute. There is a single glandular pore on the midrib underneath, and sometimes two or three on the next nerves. Peduncles three times shorter than the petioles, thick, stiff, hirsute, dotted with black. Outer calyx three or five-cleft, the segments ovate, acute, rough with hairs; the inner truncate, with three blunt teeth. Petals rounded, retuse, entire, yellow at the base, purple at the tip, pubescent on the outside. Germ ovate, acuminate, dotted with black: style longer than the stamens, three or five-cleft at top, inclined. Capsule large, ovate, dotted with black, three-celled, three-valved. Seeds ovate, acute, green^f.

This is planted, says Browne, in a few gardens in Jamaica, but is not much cultivated, for the Cotton is not thought to be so good, and the seeds are so small, that it is a difficult matter to separate them from the Cotton. It grows however more luxuriant than the common, and rises generally from seven to nine feet in height, bearing a great number of seed-vessels on all the branches.

Swartz mentions a variety, called *Cotonier de Soie* (*Xylon americanum præstantissimum*, sem. viref-

^a Murr. prodr.

^b Hort. kew. from Ger. herb.

^c Loureiro.

^d Linn. syst.

^e Hort. kew.

^f Swartz.

centi, *Tournef.*) the Cotton of which is better than any of the rest.

4. This is a shrub, with branches scarcely hairy, but having small black dots scattered over them, as the petioles also have. Leaves cordate, deeply three-lobed, in a very fertile soil five-lobed, as big as the palm of the hand, acuminate, with a single gland under the midrib. The stamens are entirely monadelphous^z.

According to Swartz, the stem is a fathom in height, biennial, roundish, rugged: branches spreading very much, angular, striated. Upper leaves three-lobed, lower five-lobed; lobes ovate, entire, nerved, pubescent; with three glandular pores underneath on the midribs of the leaves. Petioles long, round, patulous, hirsute, with black atoms scattered over them. Flowers opposite to the petioles, large, fulvous; on short, dotted peduncles. Outer calyx subtriphyllous, pubescent, dotted^h: the segments large, deeply and unequally toothed; the inner is very short, and five-lobed in waves. Capsule leathery, thickish, three-celled, three-valved; the partitions inserted in the middle of the valves, which are wrinkled within, and the edges turn back after they open. There is no receptacle, but the seeds are fixed in a double row to the central angle of the cells. Seeds about six in each cell, ovate, tapering towards the umbilicus, convex on one side, angular on the other, and whiteⁱ.

Native of India, China, and the Society Isles. Cultivated in Jamaica. Introduced here in 1777, by Daniel Charles Solander, L.L.D. It flowers in July^k.

5. Stem four or five feet high, perpendicular, round, straighter at the base, the thickness of a swan's-quill, above flexuose and thicker, somewhat angular, swelling at the origin of the branches, green, rugged, pubescent, branched. Leaves large, horizontal or oblique, cordate, broad, the lower undivided, the upper deeply three-lobed, with acuminate lobes, pubescent especially on the veins. There is a single gland on the midrib about an inch from the base. Petiole half as long again as the leaf, spreading very much, thick at the base, sometimes variously bent. Stipules in pairs on each side of the petiole and peduncle, oblique. Flower solitary, commonly one only on each branch: peduncle short, three-sided, opposite to the leaf. The stem, branches, petioles, peduncles, young leaves and smaller veins of those which are more advanced are dotted with black. The calyx also is dotted: the outer three-leaved, and when closed three-sided; the leaflets cordate, laciniated, the segments lanceolate, converging: the inner only one-third of the length, urceolate, striated, five-parted, with short, acuminate segments. Corolla as large as that of the Hollyhock, white turning red as it withers, without any spots at the base, where it is hirsute. Pistil longer than the stamens. Stigmas five, hanging down beyond the stamens, dotted with black. Capsule ovate-oblong, four-valved, sometimes but seldom five-valved, four-celled seldom five-celled. Seeds in each cell four to six or more, in a double row, involved in very white cotton^l.

6. Stem from six to fifteen feet in height, suffrutescent, biennial, smooth. Branches almost erect, round and smooth or pubescent. Leaves alternate, the upper three-lobed, the lower five-lobed; lobes ovate, acute, nerved, smooth above but pubescent underneath. Petioles five or six inches long, roundish, patulous, smooth or sometimes pubescent. Glandular pores, commonly three, on the midribs of the leaves underneath. Peduncles opposite to the petioles and shorter, thickish, round, striated, pubescent, one-flowered. Flowers large, yellow, turning finally red. Outer calyx half-five-cleft; segments ovate, acute, smooth or pubescent, or having black atoms scattered over them: inner having three or five minute, blunt teeth. Petals having a purple

spot at the base, and smooth on the outside. Filaments shorter than the petals: anthers yellow or fulvous. Germ roundish-acuminate: style three or five-cleft at top. Capsule ovate-roundish, smooth, sometimes dotted with black, three-celled, three-valved. Seeds oblong, eight to twelve, black, easily separated from the cotton.

This is the species which is so much cultivated in the West Indies^m, and forms a considerable branch of their exports.

An emulsion of the seeds is recommended in the bloody-flux; and an oil is obtained from them by expression, which supplies the boiling-house lamps in some plantationsⁿ.

Cultivated here in 1759, by Mr. Miller^o.

This and the third and fourth species are not easily distinguished, for they vary in the size of the parts, the division and pubescence of the leaves, the colour of the seeds and cotton, the adherence and tenacity of the latter, the number of glands at the back of the leaves, &c. so that it is difficult to say which are species, and which are varieties^p.]

PROPAGATION AND CULTURE.

All the species of *Gossypium* or Cotton are very tender, and will not grow in the open air in England. The first and third will ripen their seeds here, if they be sown early in the spring, upon a good hot-bed; and when the plants are come up, planted each into separate pots, and plunged into the bark-bed to bring them forward: when they are too tall to remain under the frames, remove them into the tan-bed in the stove; and when the roots have filled the pots remove them into larger. With this management the flowers will appear in July, and the seeds will be ripe towards the end of September.

The Shrub-Cotton will rise from seeds very easily, if sown on a good hot-bed early in the spring: if they are brought forward in the same manner as directed for the others, the plants will be five or six feet high the same summer; but it is difficult to preserve them through the winter, unless they are hardened gradually during the warm weather; for when they are forced on at that time, they will be so tender, as to render them incapable of resisting the least injury. In autumn they must be placed in the bark-stove, and kept in the first class of heat, otherwise they will not live through the winter in England.

[Cotton is propagated in the West Indies by the seed, which is set in rows, about five feet asunder, at the end of September, or beginning of October, at first but slightly covered; but after it is grown up, the root is well moulded. The seed is subject to decay, when it is set too deep, especially in wet weather. The soil should not be stiff, nor shallow, as this plant has a tap-root. The ground is hoed frequently, and kept very clean about the young plants, until they rise to moderate height; otherwise they are apt to be destroyed by caterpillars. It grows from four to six feet high, and produces two crops annually; the first in eight months from the time of sowing the seed; the second, within four months after the first; and the produce of each plant is reckoned about one pound weight. The branches are pruned or trimmed after the first gathering; and if the growth is over-luxuriant, this should be done sooner. When great part of the pods are expanded, the wool is picked, and afterwards cleared from the seeds by a machine called a gin, composed of two or three smooth wooden rollers of about one inch diameter, ranged horizontally, close and parallel to each other, in a frame; at each extremity they are toothed or channelled longitudinally, corresponding one with the other; and the central roller, being moved with a treadle or foot-lath, resembling that of a knife-grinder, makes the other two revolve in contrary directions. The Cotton is laid, in small quantities at a time,

^z Linn. syst. ^h Swartz. ⁱ Gærtner. ^k Hort. kew.
^l Murray.

^m Swartz. ⁿ Browne. ^o Hort. kew. ^p Swartz.

upon these rollers, whilst they are in motion, and, readily passing between them drops into a sack, placed underneath to receive it, leaving the seeds, which are too large to pass with it, behind. The Cotton thus discharged from the seeds, is afterwards hand-picked, and cleansed thoroughly from any little particles of the pods or other substances which may be adhering to it. It is then stowed in large bags, where it is well trod down, that it may lie close and compact; and the better to answer this purpose, some water is every now and then sprinkled upon the outside of the bag; the marketable weight of which is usually three hundred pounds. An acre may be expected to produce from two hundred and forty pounds to that quantity; or two hundred and seventy pounds on an average^a.

GOSYPIUM. See *Bombax*.

GOUANIA. (So named by Jacquin, in honour of Antoine Gouan, M. D. author of *Flora Monspeliaca*, *Hortus Monspeliensis*, and other celebrated works.)

Lin. gen. n. 1157. Reich. 1268. Schreb. 1592.

Jacqu. amer. 263. Juss. 381.

Class. 23. 1. Polygamia Monoecia.

Nat. order of *Rhamni* Juss.

GENERIC CHARACTER.

* *Hermaphrodites*.

CAL. Perianth one-leafed, superior, funnel-form, five-cleft: tube permanent; segments ovate, acute, spreading, deciduous.

COR. none.

STAM. Filaments five, subulate, length of the calyx, and alternate with the segments. Anthers roundish, incumbent, veiled; veil like a cowl, elastic.

PIST. Germ inferior. Style subulate, half three-cleft. Stigmas obtuse.

PER. Fruit dry, three-sided, divisible into three seeds.

SEEDS. Three parts of the fruit, roundish inclined to three-sided, two-winged.

* *Males*, on the same plant.

CAL. COR. and STAM. as in the *Hermaphrodites*.

PIST. Germ none. Style as in the *Hermaphrodites*. Stigmas obscure or none.

ESSENTIAL CHARACTER.

HERM. Cal. five-cleft. Cor. none. Anthers five, under a veil. Style three-cleft. Fruit inferior, tripartite.

MALE similar, but without germ and stigma.

SPECIES.

1. *Gouania domingensis*. Charw.-stick.

Lin. spec. 1663. (edit. 1. 427. Banisteria.) syst. 912. Reich. 4. 336. hort. ups. 97. (Paullinia).

G. glabra. Jacqu. amer. 264. t. 179. f. 40. pict. 128. t. 264. f. 96.]

Lupulus sylvestris americana claviculis donata. Pluk. alm. 229. t. 201. f. 4. & t. 63. f. 3. Mill. dict. ed. 1. vol. 2. addenda.

DESCRIPTION, &c.

[Stem shrubby, and climbing like Hops by axillary tendrils. Leaves ovate or oblong-ovate, acuminate, or blunt with a point, unequally serrate-toothed, or slightly crenate only, smooth, deep green, alternate, petioled, two inches long. Racemes furnished with one or two leaflets. The male flowers have no pistil whatsoever; but there are three or four flowers in a hundred that have a style without any germ.

Native of St. Domingo, in woods¹. Cultivated by Mr. Miller in 1739².]

PROPAGATION AND CULTURE.

Sow the seeds on a hot-bed early in the spring, and when the plants are strong enough, transplant each into a small pot filled with light rich earth, and plunge the pots into a moderate hot-bed of tanner's-bark, watering and shading the plants until they have taken new root. In winter plunge them into the bark-bed in the stove, and water them frequently. The stems must be supported, and they seldom produce flowers before the third summer.

^a Long's Jam. vol. 3. p. 686. &c. and Browne.

¹ Jacquin. ² Hort. kew. from Mill. dict. ed. 1. vol. 2. add.

[GOUPIA. See *Glossopetalum*.

GOURD. See *Cucurbita*.

—— Bitter. See *Cucumis*.

—— Sour. See *Adansonia*.

GOUT-WEED. See *Aegopodium*.

GOWLANS, LOCKER. See *Trollius*.]

GRAFTING is the taking a shoot from one tree, and inserting it into another, in such a manner, as that both may unite closely, and become one tree; this is called by the ancient writers in husbandry and gardening, incision, to distinguish it from inoculating, or budding, which they call *inserere oculos*.

The use of grafting is to propagate any curious sorts of fruits, so as to be certain of the kinds, which cannot be done by any other method; for as all the good fruits have been accidentally obtained from seeds, so the seeds of these, when sown, will many of them degenerate, and produce such fruit as are not worth cultivating: but when shoots are taken from such trees as produce good fruit, these will never alter from their kind, whatever be the stock, or tree, on which they are grafted; for though the grafts receive their nourishment from the stocks, yet their varieties are never altered by them, but continue to produce the same kind of fruit as the tree from which they were taken; the only alteration is, that when the stocks on which they are grafted do not grow so fast, and afford a sufficient supply of nourishment to the grafts, they will not make near so great progress as they otherwise would do, nor will the fruit they produce be so fair, and sometimes not so well flavoured.

The shoots are termed cions, or grafts; in the choice of these the following directions should be carefully observed. 1st, That they are shoots of the former year, for when they are older, they never succeed well. 2dly, Always to take them from healthy fruitful trees, for if the trees are sickly from whence they are taken, the grafts very often partake so much of the distemper as rarely to get the better of it, at least for some years; and when they are taken from young luxuriant trees, whose vessels are generally large, they will continue to produce luxuriant shoots, and are seldom so fruitful as those which are taken from fruitful trees, whose shoots are more compact, and the joints closer together; at least it will be a great number of years before the luxuriant grafts begin to produce fruit, if they are managed with the greatest skill. 3dly, You should prefer those grafts which are taken from the lateral, or horizontal branches, to those from the strong perpendicular shoots, for the reasons before given.

These grafts, or cions, should be cut off from the trees before the buds begin to swell, which is generally three weeks or a month before the season for grafting; therefore, when they are cut off, they should be laid in the ground with the cut downwards, burying them half their length, and covering their tops with dry litter, to prevent their drying; if a small joint of the former year's wood is cut off with the cion, it will preserve it the better, and when they are grafted, this may be cut off; for at the same time the cions must be cut to a proper length before they are inserted in the stocks; but, till then, the shoots should remain their full length, as they were taken from the tree, which will preserve them better from shrinking; if these cions are to be carried to a considerable distance, it will be proper to put their ends into a lump of clay, and to wrap them up in moss, which will preserve them fresh for a month, or longer; but these should be cut off earlier from the trees than those which are to be grafted near the place where the trees are growing.

Having given directions for the cions and grafts, we next come to that of the stock, which is a term applied to the trees intended for grafting; these are either such old trees as are already growing in the places where they are to remain, whose fruit is intended to be changed, or young trees, which have been

been raised in a nursery for a supply to the garden ; in the former case there is no other choice, but that of the branches, which should be such as are young, healthy, well situated, and have a smooth bark ; if these trees are growing against walls, or espaliers, it will be proper to graft six, eight, or ten branches, according to the size of the trees, by which they will be much sooner furnished with branches again, than when a less number of cions are put in ; but in standard-trees, four, or at most six cions will be sufficient.

In the choice of young stocks for grafting, you should always prefer such as have been raised from the seed, and that have been once or twice transplanted.

Next to these, are those stocks which have been raised from cuttings, or layers, but those which are suckers from the roots of other trees should always be rejected, for these are never so well rooted as the others, and constantly put out a great number of suckers from their roots, whereby the borders and walks of the garden will be always pestered with them during the summer season, which is not only unsightly, but they also take off part of the nourishment from the trees.

If these stocks have been allowed a proper distance in the nursery where they have grown, the wood will be better ripened, and more compact than those which have grown close and have been there drawn up to a greater height ; the wood of these will be soft, and their vessels large, so that the cions grafted into them will shoot very strong, but they will be less disposed to produce fruit than the other ; and when trees acquire an ill habit at first, it will be very difficult to reclaim them afterward.

Having directed the choice of cions and stocks, we come next to the operation, in order to which you must be provided with the following tools.

1. A neat small hand-saw to cut off the heads of large stocks.

2. A good strong knife with a thick back, to make clefts in the stocks.

3. A sharp penknife to cut the grafts.

4. A grafting chissel and a small mallet.

5. A wedge, to keep open the clefts in large stocks till the insertion of the graft.

6. Bafs strings, or woollen yarn, to tie the grafts with, and such other instruments and materials as you should find necessary, according to the manner of grafting you are to perform.

7. A quantity of clay, which should be prepared a month before it is used, and kept turned and mixed, like mortar every other day ; this is to be made after the following manner :

Get a quantity of strong fat loam (in proportion to the quantity of trees intended to be grafted) then take some new stone-horse dung, and break it in amongst the loam, and if you cut a little straw, or hay, very small, and mix amongst it, the loam will hold together the better ; and if there be a quantity of salt added, it will prevent the clay from dividing in dry weather ; these must be well stirred together, putting water to them after the manner of making mortar ; it should be hollowed like a dish, and filled with water, and kept every other day stirred ; but it ought to be remembered, that it should not be exposed to the frost, or drying winds, and the oftener it is stirred and wrought the better.

Of late years some persons have made use of another composition for grafting, which they have found to answer the intention of keeping out the air, better than the clay before described. This is composed of turpentine, bees-wax, and resin, melted together ; which, when of a proper consistence, may be put on the stock round the graft, in the same manner as the clay is usually applied ; and though it be not above a quarter of an inch thick, yet it will keep out the air more effectually than the clay ; and as cold will harden this, there is no danger of its being hurt by frost, which is very apt to cause the clay to cleave, and sometimes fall off ; and when the heat of summer comes on, this mixture will melt, and fall off

without any trouble. In using of this, there should be a tin, or copper-pot, with conveniency under it to keep a very gentle fire with small-coal, otherwise the cold will soon condense the mixture ; but you must be careful not to apply it too hot, lest you injure the graft. A person who is a little accustomed to this composition, will apply it very fast, and it is much easier for him than clay, especially if the season should prove cold.

There are several ways of grafting, the principal of which are five :

1. Grafting in the rind, called also shoulder-grafting, which is only proper for large trees ; this is called crown-grafting, because the grafts are set in form of a circle, or crown, and is generally performed about the latter end of march, or the beginning of april.

2. Cleft-grafting, which is also called stock, or slit-grafting ; this is proper for trees or stocks of a lesser size, from an inch, to two inches or more diameter ; this grafting is to be performed in the months of february and march, and supplies the failure of the escutcheon way, which is practised in june, july, and august.

3. Whip-grafting, which is also called tongue-grafting ; this is proper for small stocks of an inch, half an inch, or less, diameter ; this is the most effectual way of any, and which is most in use.

4. Grafting by approach, or abscission ; this is to be performed when the stock you would graft on, and the tree from which you take your graft, stand so near together, that they may be joined ; this is to be performed in the month of april, and is also called inarching, and is chiefly used for Jasmines, Oranges, and other tender exotic trees.

[5. Grafting in the root, which is of later invention than any of the former ways, and in many circumstances may be an improvement of them all.

The season for grafting must be regulated by the weather. Our climate is so uncertain in the spring, that it is better to defer it till the circulation of the sap is brisk, and the buds of the stocks are beginning to break into leaves : observing only that the weak shoots of tender trees will not admit of being so long cut as the more hardy.

It is indispensably necessary never to graft while it actually freezes or rains*.]

We come next to the manner of performing the several ways of grafting.

The first method, which is termed rind, or shoulder-grafting, is seldom practised but on large trees, where either the head, or the large branches, are cut off horizontally, and two or four cions put in, according to the size of the branch, or stem ; in doing of this, the cions are cut flat on one side, with a shoulder to rest upon the crown of the stock ; then the rind of the stock must be raised up, to admit the cion between the wood and the bark of the stock, which must be inserted about two inches, so as the shoulder of the cion may meet, and closely join the crown of the stock ; and after the number of cions are inserted, the whole crown of the stock should be well clayed over, leaving two eyes of the cions uncovered therewith, which will be sufficient for shooting ; this method of grafting, was much more in practice formerly than at present ; the discontinuance of it was occasioned by the ill success it was attended with ; for as these cions were placed between the rind of the stock and the wood, they were frequently blown out by strong winds, after they had made large shoots, which has sometimes happened after five or six years growth ; so that whenever this method is practised, there should be some stakes fastened to support the cions, until they have almost covered the stock.

The next method is termed cleft, or stock-grafting ; this is practised upon stocks, or trees, of a smaller size, and may be used with success, where the rind of the stock is not too thick, whereby the inner bark of the cion will be prevented joining to that of

the stock; this may be performed on stocks, or branches, which are more than one inch diameter; in the doing of this, the head of the stock, or branch, may be cut off with a slope, and a slit made the contrary way, in the top of the slope, deep enough to receive the cion, which should be cut sloping, like a wedge, so as to fit the slit made in the stock, being careful to leave that side of the wedge, which is to be placed outward, much thicker than the other; and in putting the cion into the slit of the stock, there must be great care taken to join the rind of the cion to that of the stock; for if these do not unite, the grafts will not succeed: when this method of grafting is used to stocks which are not strong, it will be proper to make a ligature of bafs, to prevent the slit of the stock from opening; then the whole should be clayed over, to prevent the air from penetrating the slit, so as to destroy the grafts, only leaving two eyes of the cions above the clay for shooting.

The third method is termed whip, or tongue-grafting, which is the most commonly practised of any by the nurserymen near London, especially for small stocks, because the cions much sooner cover the stocks in this method than in any other.

This is performed by cutting off the head of the stocks sloping; then there must be a notch made in the slope toward the upper part downward, a little more than half an inch deep, to receive the cion, which must be cut with a slope upward, and a slit made in this slope like a tongue, which tongue must be inserted into the slit made in the slope of the stock, and the cion must be placed on one side of the stock, so as that the two rinds of both cion and stock may be equal, and join together exactly; then there should be a ligature of bafs to fasten the cion, so as that it may not be easily displaced, and afterward clay it over, as in the former methods.

The fourth sort of grafting is termed inarching, grafting by approach, or ablastation. This is only to be performed when the stocks, which are designed to be grafted, and the tree from which the graft is to be taken, stand so near together, or may be brought so near together, as that their branches may be united; this method of grafting is commonly practised on tender exotic plants, and some other sorts which do not succeed in any of the other methods.

In performing this operation, a part of the stock, or branch, must be slit off about two inches in length, observing always to make choice of a smooth part of the stock; then a small notch should be made in this slit of the stock downward, in the same manner as has been directed for whip-grafting; then the branch of the tree designed to be inarched, should have a part slit off in like manner as the stock, and a slit made upward in this, so as to leave a tongue; which tongue should be inserted into the slit of the stock, observing to join their rinds equally, that they may unite well together; then make a ligature of bafs, to keep them exactly in their situation, and afterward clay this part of the stock over well, to keep out the air; in this method of grafting, the cion is not separated from the tree, until it is firmly united with the stock, nor is the head of the stock, or branch, which is grafted, cut off till this time, and only half the wood pared off with a slope, about three inches in length, and the same of the cion, or graft.

This method of grafting is not performed so early in the season as those of the other, it being done in the month of april, when the sap is flowing, at which time the cion and stock will join together, and unite much sooner than at any other season.

The Walnut, Fig, and Mulberry, will take by this method of grafting; but neither of these will succeed in any of the other methods; there are also several sorts of Evergreens, which may be propagated by this method of grafting; but all the trees which are grafted in this way are weaker, and never grow to the size of those which are grafted in the other methods; therefore this is rarely practised,

but on such sorts of trees as will not take by the other methods.

[The fifth method is performed by cutting the clean smooth roots of the stocks in pieces five or six inches long, and as large or a little larger than the graft. Let them be whip-grafted and tied together very close, so as to prevent the wet from affecting the wounded parts, and plant them so deep, that the graft, which should be four or five inches long, may be about half buried. By this method, the grafts themselves will root, and a nearer similitude preserved to the tree from whence the grafts are taken: nay after two or three years the stock may be cut quite away, and the graft left to maintain itself. In practising this method, the grafts may be an inch or two longer than is directed for the others.]

The next thing which is necessary to be known, by those who would practise this art, is, what trees will take and thrive by being grafted upon each other; and here there have been no sure directions given by any of the writers on this subject, for there will be found great mistakes in all their books, in relation to this matter; but as it would swell this article too much, if all the sorts of trees were to be here enumerated, which will take upon each other by grafting, I shall only mention such general directions, as, if attended to, will be sufficient to instruct persons; so as they may succeed.

All such trees as are of the same genus, i. e. which agree in their flower and fruit, will take upon each other: for instance, all the Nut-bearing trees may be safely grafted on each other, as may all the Plum-bearing trees, under which head I reckon not only the several sorts of Plums, but also the Almond, Peach, Nectarine, Apricot, &c. which agree exactly in their general characters, by which they are distinguished from all other trees; but as many of these are very subject to emit large quantities of gum from the parts of the trees as are deeply cut and wounded, for the tender trees of this kind, viz. Peaches and Nectarines, which are most subject to this, it is found to be the surest method to bud or inoculate these sorts of fruits, for which see INOCULATION.

Then all such trees as bear cones will do well upon each other, though they may differ in one being evergreen, and the other shedding its leaves in winter; as is observable in the Cedar of Libanus, and the Larch-tree, which are found to succeed upon each other very well; but these must be grafted by approach, for they abound with a great quantity of resin which is apt to evaporate from the graft, if separated from the tree before it is joined with the stock, whereby they are often destroyed; as also the Laurel on the Cherry, or the Cherry on the Laurel. All the mast-bearing trees will also take upon each other, and those which have a tender soft wood will do well if grafted in the common way; but those that are of a more firm contexture, and are slow growers, should be grafted by approach.

By strictly observing this rule, we shall seldom miscarry; provided the operation be rightly performed, and at a proper season, unless the weather should prove very bad, as it sometimes happens, whereby whole quarters of fruit-trees miscarry; and it is by this method that many kind of exotic trees are not only propagated, but also rendered hardy enough to endure the cold of our climate in the open air; for, being grafted upon stocks of the same sort which are hardy, the grafts are rendered more capable to endure the cold, as has been experienced by most of our valuable fruits now in England, which were formerly transplanted here from more southerly climates, and were at first too impatient of our cold to succeed well abroad; but have been, by budding or grafting upon more hardy trees, rendered capable of resisting our severest cold.

GRAIN, OILY. See *Sesamum*.

GRAIN, SCARLET. See *Castus* and *Quercus*.

GRAINS OF PARADISE. See *Amonum*.

Butcher,

GRAMEN.

GRAMEN. See *Grass*.Gramen Fuchsi. See *Stellaria holostea*.aculeatum. See *Cryptis aculeata*.agrorum, Mor. See *Aira cespitosa*.alopecuroides. See *Alopecurus*, *Cynosurus*, *Holcus*, *Lagurus*.alopecuro accedens. See *Milium*.alopecurum. See *Alopecurus*, *Anthoxanthum*, *Cynosurus*, *Saccharum sericeum*.alpinum. See *Aira*, *Avena*, *Festuca*, *Poa alpina*.altissimum. See *Aira cespitosa*.americanum. See *Cenchrus echinatus*.aquaticum. See *Aira aquatica*, *Alopecurus geniculatus*, *Festuca fluitans*, *Phalaris arundinacea*, *Poa aquatica*.arguens, Rumph. See *Stipa arguens*—*Anthistiria ciliata*, Linn. suppl.arundinaceum. See *Agrostis*, *Arundo*, *Festuca*, *Holcus*, *Melica*, *Phalaris arundinacea*, *Saccharum*, *Scirpus*.arvense. See *Agrostis*, *Cynosurus*, *Dactylis*, *Poa*.asperum. See *Dactylis*.avenaceum. See *Agrostis*, *Aira*, *Andropogon*, *Anthoxanthum*, *Avena*, *Bromus*, *Elymus*, *Festuca*, *Melica*, *Milium*, *Pharus*, *Stipa*.barcinonense. See *Cynosurus aureus*.bermudense. See *Panicum dimidiatum* and *Rottboella dimidiata*.bicorne. See *Andropogon*.bromoides. See *Bromus*.bufonium. See *Juncus bufonius*.bulbosum. See *Hordeum* and *Sagittaria*.caninum. See *Agrostis*, *Aira*, *Cenchrus*, *Elymus*, *Holcus*, *Poa*, *Triticum*.capillatum. See *Agrostis* and *Festuca*.capitatum, Rumph. See *Schoenus coloratus*—*Kyllinga monocephala*.caricosum. See *Andropogon caricosum*, and *Panicum polystachyon*, *Cenchrus* species.caryophyllatum. See *Carex*.caryophylleum. See *Carex*.creticum. See *Ægilops caudata*, and *Secale villosum*.cristatum. See *Cynosurus cristatus* and *Festuca ovina*.cruciatum. See *Agrostis radiata*.cyperoides. See *Carex*, *Cyperus*, *Schoenus*, *Scirpus*.dactyloides. See *Cynosurus indicus*.dactylon. See *Agrostis*, *Andropogon*, *Cynosurus*, *Panicum*, *Paspalum*, *Spinifex*, *Tripsacum*.echinatum. See *Cenchrus*.enode. See *Melica coerulea*.eranthemum. See *Briza Eragrostis*.erectum. See *Juncus bufonius*.eriophorum. See *Eriophorum*.exile. See *Juncus*, *Nardus*, *Poa*, *Triticum*.festuceum. See *Bromus* and *Festuca*.filiceum. See *Briza*.floridum. See *Stellaria*.fluviale. See *Alopecurus* and *Cyperus*.foliis junceis. See *Aira* and *Festuca*.fumi, Rumph. See *Poa tenella*.geniculatum. See *Panicum verticillatum*.glumis variis. See *Cynosurus coeruleus*.hirsutum. See *Juncus* and *Scirpus*.holosteum. See *Juncus*.hordeaceum. See *Elymus* and *Hordeum*.ischœum. See *Cynosurus*.junceum. See *Andropogon*, *Bromus*, *Carex*, *Cyperus*, *Eriocaulon*, *Juncus*, *Littorella*, *Nardus*, *Scheuchzeria*, *Schoenus*, *Scirpus*, *Subularia*, *Xyris*.juncoides. See *Eriophorum* and *Juncus*.lanatum. See *Holcus lanatus*.legitimum, Clus. See *Panicum* (*Agrostis*) *dactylon*.locustis echinatis. See *Cenchrus echinatus*.lohiaceum. See *Ægilops* (*Rottboellia*) *incurvata*, *Agrostis*, *Bromus*, *Cynosurus*, *Elymus*,*Festuca*, *Lolium*, *Milium*, *Nardus*, *Poa*, *Triticum*.Gramen luzulæ. See *Juncus* and *Schoenus*.maderaspatanum. See *Poa ciliaris*.majus. See *Poa aquatica*.mannæ. See *Festuca fluitans*.mariae. See *Holcus odoratus*.maritimum. See *Cenchrus tribuloides*, *Dactylis cynosuroides*, *Festuca phænicoïdes*, *Phalaris arenaria*, *Ruppia maritima*, *Triticum maritimum*.miliaceum. See *Agrostis*, *Holcus*, *Milium*, *Panicum*, *Phalaris* (*Leersia*) *oryzoides*.minimum. See *Agrostis pumila*, *Aira præcox*, *Cenchrus capitatus*, *Triticum unilaterale*.montanum. See *Agrostis stolonifera*, *Cenchrus capitatus*, *Festuca decumbens*, *Melica ciliata*, *Poa bulbosa*.murorum. See *Bromus tectorum*, *Festuca myurus*, *Poa compressa*.myloicyphorum. See *Uniola paniculata*.myosuroides. See *Alopecurus*.myuros or myurum. See *Ægilops* (*Rottboellia*) *incurvata* and *Alopecurus*.nemorosum. See *Aira*, *Carex*, *Juncus*, *Poa*.nodosum. See *Avena elatior* and *Phleum nodosum*.orientale. See *Aira arundinacea*, *Aristida plumosa*, *Cenchrus frutescens*, *Cornucopie cincinnatum*, *Secale* (*Triticum*) *orientale*.palustre. See *Phalaris* (*Cynosurus*) *eruciformis*, *Phalaris* (*Leersia*) *oryzoides*, *Poa aquatica* and *palustris*.paniceum. See *Holcus*, *Olyra*, *Panicum*, *Paspalum*.paniculatum. See *Agrostis*, *Aira*, *Briza*, *Festuca*, *Holcus*, *Melica*, *Milium*, *Poa*.parnassi. See *Corvallaria bifolia* and *Parnassia*.parvum. See *Aira præcox*, *Carex pedata*, *Uniola spicata*.phalaroides. See *Agrostis*, *Aira*, *Alopecurus*, *Bromus*, *Cynosurus*, *Phalaris*, *Poa*.phoenicoides. See *Festuca phoenicoides*.piperinum. See *Pilularia*.Polyanthemum. See *Statice Armeria*.pratense. See *Aira*, *Anthoxanthum*, *Avena*, *Bromus*, *Cynosurus*, *Eriophorum*, *Festuca*, *Holcus*, *Melica*, *Phalaris*, *Poa*.pumilum. See *Triticum maritimum*.pusillum. See *Scirpus capillaris* and *Triticum unilaterale*.sciurum. See *Cynosurus aureus*.secalinum. See *Agrostis*, *Andropogon*, *Elymus*, *Hordeum*.segetum. See *Agrostis Spica venti* and *Aira cespitosa*.serotinum. See *Agrostis rubra* and *Milium lendigerum*.spartum f. spartum. See *Agrostis minima*, *Aira canescens*, *Andropogon Gryllus*, *Arundo arenaria*, *Carex vulpina*, *Festuca elatior* & *spadicea*, *Lygeum Spartum*, *Nardus stricta*, *Stipa pennata*.spica Brizæ. See *Bromus distachyos* & *pinnatus* and *Melica papilionacea*.spica cristata. See *Poa cristata*.spica triticea. See *Elymus caninus*.spicatum. See *Ægilops*, *Alopecurus agrestis*, *Arundo arenaria*, *Carex tomentosa*, *Cryptis aculeata*, *Dactylis glomerata*, *Festuca phoenicoides*, *Hordeum marinum*, *Lagurus ovatus*, *Secale villosum*, *Stipa pennata*, *Triglochin maritimum*.supinum. See *Agrostis canina* and *Panicum birtellum*.sylvaticum. See *Bromus giganteus*, *Milium effusum*, *Poa nemoralis*.tomentarium f. tomentosum. See *Eriophorum*, *Lagurus*, *Saccharum sericeum*.tremulum. See *Briza* and *Poa Eragrostis*.tribuloides. See *Cenchrus*.triglochin. See *Triglochin*.triticeum. See *Festuca decumbens* and *Bromus cristatus* f. *Triticum cristatum*.

- Gramen tritici spica. See *Triticum*.
 ——— typhinum. See *Alopecurus*, *Cynosurus*, *Phalaris*, *Pbleum*.
 ——— typhoides. See *Alopecurus*, *Phalaris*, *Pbleum*.
 ——— vaccinum, *Rumph.* See *Cynosurus indicus*.
 ——— vernum. See *Anthoxanthum vernum* and *Poa bulbosa*.
 ——— virginianum. See *Panicum*.
 ——— xerampelinum. See *Poa bulbosa*.
 GRAMINIFOLIA. See *Pilularia*, *Subularia*, *Zannichellia*.
 GRANADILLA. See *Passiflora*.
 GRANA PARADISI. See *Arumum*.
 GRANATUM. See *Punica*.
 GRANUM MOLUCCUM. See *Croton Tiglium*.
 ——— MOSCHATUM. See *Hibiscus Abelmoschus*.
 GRAPE. See *Vitis*.
 ——— HYACINTH. See *Hyacinthus*.
 ——— SEA. See *Ephedra*.
 ——— SEA-SIDE. See *Coccoloba*.

GRASS. The Grasses, so extensively useful in rural oeconomy, are chiefly to be found in the second Order of the Third Class, (Triandria Digynia) in the Sexual System.

However numerous they may be, and distinct from each other, they generally agree in the following circumstances; which, taken together, form the Natural Character of this tribe or family. The Calyx is a glume or chaff, in most species composed of two valves, one larger and gibbous, the other smaller and flat. The Corolla also is a bivalve glume, and is accompanied by a very small, superior, two-leaved nectarium, of an oblong form. The Stamens are three in number; the filaments capillary; the anthers oblong and bicapsular. There are two Pistils, which are pubescent, reflex or bent back from each other, and terminated by pubescent stigmas. One Seed only, or grain, succeeds to each flower: it has no pericarp, but is covered by the calyx, corolla, or both; it is of an oblong form, drawn to a point at both ends, and monocotyledonous, or composed of one lobe only.

Besides this agreement in the fructification, Grasses are known at first sight to persons totally unskilled in Botany, by their peculiar appearance, or habit as Botanists call it. Their stalk is simple or unbranched, straight, hollow, and jointed. Their leaves are quite entire, of a long linear shape, acuminate or drawing gradually to a point at the end, marked with lines parallel to the midrib or middle nerve. Upon the culm or stalk there is only one of these leaves to each joint, arising from a sheath which invests the stalk, usually to a considerable distance. The seed, it is well known, is farinaceous, or abounding in meal, and is the principal food of many tribes of birds; as the seeds of the larger sorts, which we call Corn, are of mankind.

One genus of Grass entitled *Anthoxanthum* differs from the rest in having two stamens only. And there are several genera, which having male flowers mixed with the hermaphrodites are placed by Linneus in his class Polygamia.

Artificial Grasses, vulgarly so called, are mostly Leguminous plants, totally different in every respect from Grasses, except in being used as food for cattle; and are to be sought for in the class Diadelphia.

All the Grasses are particularly treated of under their respective genera and species, for which see the articles *Aegilops*, *Agrostis*, *Aira*, *Alopecurus*, *Andropogon*, *Anthisteria*, *Anthoxanthum*, *Apluda*, *Arundo*, *Avena*, *Bromus*, *Cenchrus*, *Cryptis*, *Cynosurus*, *Dactylis*, *Elymus*, *Eriphorum*, *Festuca*, *Holcus*, *Hordeum*, *Ischæmum*, *Lolium*, *Melica*, *Miegia*, *Milium*, *Nardus*, *Panicum*, *Pappophorum*, *Paspalum*, *Perotis*, *Phalaris*, *Pbleum*, *Poa*, *Rottboellia*, *Saccharum*, *Secale*, *Stipa*, *Triticum*.]

For the Artificial Grasses—

- CLOVER. See *Trifolium*.
 LUCERNE. See *Medicago*.
 SAINT-FOIN. See *Hedysarum*.
 TREFOIL. See *Trifolium*.

Grass for Gardens.

The English Grass is of so good a quality for walks or Grass-plats, that if they be kept in good order, they have that exquisite beauty that they cannot come up to in France, and several other countries. But green walks and green plats are, for the most part, not made by sowing the Grass-feed, but by laying turfs; and, indeed, the turfs from a fine common or down, are much preferable to sown Grass.

In sowing a fine green plat, there is a difficulty in getting good seed; it ought not to be such as is taken out of the hay-loft without distinction; for that seed shooting too high and making large stalks, the lower part will be naked and bare; and although it be mowed ever so often, it will never make handsome Grass; but, on the contrary, will come to nothing but tufts of weeds and Quick-grass, very little better than that of the common fields.

If walks or plats be made by sowing, the best way is to procure the seed from those pastures where the Grass is naturally fine and clear, or else the trouble of keeping it from spiry and benty Grass will be very great, and it will scarce ever look handsome.

In order to sow Grass-feed, the ground must be first dug or broken up with a spade; and when it has been dressed and laid even, it must be very finely raked over, and all the clods and stones taken off, and covered over an inch thick with good mould, to facilitate the growth of the seed; this being done, the seed is to be sown pretty thick, that it may come up close and short; and it must be raked over again to bury and cover the seed, that if the weather should happen to be windy, it may not be blown away.

As to the season of sowing Grass, the middle or latter end of august is a good time, because the seed naturally requires nothing but moisture to make it grow: if it be not sown till the latter end of february, or the beginning of march, if the weather proves dry, it will not so soon make the walks or quarters green. It is also best to sow it in a mild day, and inclining to rain; for that, by sinking down the seed in the earth, will cause it to shoot the sooner. But where Grass is sown in gardens, either for lawns or walks, there should always be a good quantity of the White Trefoil or Dutch Clover sown with it, for this will make a fine turf much sooner than any other sown Grass, and will continue a better verdure than any of the Grass tribe.

After the seed is well come up, and the Grass is very thick and of a beautiful green, it will require a constant care to keep it in order: this consists in mowing the Grass often, for the oftener it is mowed, the thicker and handsomer it grows; it must also be rolled with a cylinder or roller of wood, to level it as much as possible.

If Grass be neglected, it will run into Quick-grass and weeds; and if it does so, there is no way to recover it, but either by sowing it, or laying it over again, and that once in every two years; but if the ground be well cleared from the roots of strong weeds, and the turf be taken from a fine level common, it will continue handsome for several years, provided it be well kept.

In order to keep Grass-plats or walks handsome and in good order, in autumn you may sow some fresh seed over any places that are not well filled, or where the Grass is dead, to renew and furnish them again; but there is nothing which improves Grass so much as constant rolling and polling it, to destroy wormcasts, and thereby the turf is rendered fine.

It is a general practice when turf is laid in gardens, to cover the surface of the ground under the turf, either with sand or very poor earth; the design of this is to keep the Grass fine, by preventing its growing too rank. This is proper enough for very rich ground, but it is not so for such land as is but middling or poor; for when this is practised in such places, the Grass will soon wear out, and decay in patches.

When turf is taken from a common or down, there should

should be regard had to the cleanness of it, and not to take such as is full of weeds: for it will be a very tedious piece of work to weed them out after the turf is laid; and unless this is done, the Grass will never appear handsome.

Where turf is designed to remain for years without renewing, there should be dressing laid upon it every other year, either of very rotten dung, ashes, or, where it can be easily procured, very rotten tan is a good dressing for Grass; but these dressings should be laid on early in winter, that the rain may wash them into the ground before the drought of the spring comes on, otherwise they will occasion the Grass to burn when the warmth of summer begins. Where Grass is so dressed, and kept well rolled and mowed, it may be kept very beautiful for many years; but where it is not dressed or fed with sheep, it will rarely continue handsome more than eight or ten years.

Grass for Meadows and Pastures.

The land on which Grass-seed is intended to be sown, should be well ploughed, and cleared from the roots of noxious weeds, such as Couch-grass, Fern, Rushes, Heath, Gorse, Broom, Rest-harrow, &c. which, if left in the ground, will soon get the better of the Grass, and over-run the land. Therefore in such places where any of these weeds abound, it will be a good method to plough up the surface in april, and let it lie some time to dry; then harrow the roots into small heaps, and burn them. The ashes so produced, when spread on the land, will be a good manure for it. The method of burning the roots is particularly directed under the article LAND, which see: but where Couch-grass, Fern, or Rest-harrow is in plenty, whose roots run far under ground, the land must be ploughed two or three times pretty deep in dry weather, and the roots carefully harrowed off after each ploughing, which is the most sure method to destroy them. Where the land is very low, and of a stiff clayey nature, which holds water in winter, it will be of singular service to make some under-ground drains to carry off the wet; which, if detained too long on the ground, will render the Grass sour. The method of making these drains is prescribed under the article LAND, which see.

Before the seed is sown, the surface of the ground should be made level and fine, otherwise the seed will be buried unequally. When the seed is sown, it must be gently harrowed in, and the ground rolled with a wooden roller, which will make the surface even, and prevent the seeds being blown in patches. When the Grass comes up, if there should be any bare spots where the seed has not grown, they may be sown again, and the ground rolled, which will fix the seeds; and the first kindly showers will bring up the Grass, and make it very thick.

Where the land is designed to continue in pasture, it should be sown with the best sorts of Grass-seeds, and white Dutch Clover, or what is commonly called Honeyfuckle Grass in many parts of England, but there is a great difficulty of procuring hay-seeds which are good; for in all the good pastures near London, which abound with the best sorts of Grass, the hay is commonly cut before the seeds of the Grass are ripe; so that those seeds which are procured from the stables where the horses are fed with the best sort of hay, are little more than chaff, or at best are only such as are of the early kinds of Grass, with a great quantity of Plantain and other weeds; which has discouraged many gentlemen from sowing them, nor has any one attempted to save these seeds properly; and as it requires longer time, and more attention, to save a quantity of seeds of the purer sort of Grass than the generality of people care to bestow, I would recommend the setting some of those upland pastures which are cleanest from weeds, and have the sweetest herbage aside, to stand for seeds; and although by so doing the hay will be less valuable, yet from the sale of the seeds, it may answer better to the possessor than to mow it merely for the hay; for any gentleman who has regard to the beauty of his land, had better give six times the price for such seeds, as is usually paid for the ordinary seeds, since the first expence of seeds is not to be put in competition with the beauty and advantage of having

such as are good; for when the land is brought to a good sward, which may be done in one year, where it is properly prepared and sown with good seeds, it may be kept in good order, and by good management improved annually, and will continue so as long as proper care is taken of it. I know some land which was sown in the method hereafter directed above forty years ago, which are now as good pastures as any I have seen, and may be always continued so.

These grounds abounded with many bad weeds, so they had a winter and summer's fallow, in which time they were five times ploughed, and ten times harrowed in order to destroy the weeds, and make the surface of the ground fine; in august they were sown with the best Grass-seeds as could be procured, three bushels of this, and nine pounds of the white Dutch Clover-seeds were allowed to each acre; as there happened rains soon after the seeds were sown, so the Grass came up well; but among it were a great number of weeds, which were drawn up and carried off the ground, and in the beginning of october the fields were rolled with a barley roller; in the spring the fields were again weeded, and afterwards rolled, and that summer there was more than two tons of hay per acre mowed off the land; and by constant weeding twice a year, sweeping it with a bush-harrow, rolling and dressing of the land, the Grass has been greatly improved since, and is now as good pasture as any in England: and since I have laid down great quantities of land in the same manner, and with equal success, therefore from many years experience can recommend it, as the surest method of having good pastures.

But I know the generality of farmers will object to the first loss of their crop, and also to the after expence of weeding, rolling, &c. as too great for common practice: however, I am well satisfied from experience, that whoever will be at the expence, will find their account in it; for the crops of hay will be so much better, and the after pasture also, that it will more than pay the expence, as from many exact accounts which have been kept of the whole, is sufficiently demonstrated, and the verdure of these pastures is charming to all those who have any taste of natural beauties.

[It is wonderful, remarks the benevolent Stillingfleet, how long mankind has neglected to make a proper advantage of plants so important as Grasses, and which in almost every country are the chief food of cattle. The grazier for want of distinguishing, and selecting Grasses for seed, fills his pastures either with weeds, or species improper for the soil; when by making a right choice, after some trials he might be sure of the best grass, and in the greatest abundance that his lands admits of. At present, if he wants to lay down his land to grass, he usually takes his seeds indiscriminately from a foul hay-rick: by which means, besides a certain mixture of all sorts of rubbish, if he should chance to have a large proportion of good seed, it is not unlikely but that what he intends for dry land may come from such as is moist, and the contrary.]

On this occasion some say, that if you manage your ground properly, good grasses will come of themselves. But the question is, how long it will be before this happens; and why be at the expence of sowing what you must afterwards try to destroy by manuring? which must be the case, so long as all kinds of rubbish are sown under the name of hay-seeds. Again, if the best way be to let the ground take its chance, why is the farmer at the expence of procuring the seeds of White or Broad Clover, which come up in almost all parts of England spontaneously? But if this be allowed not to be the best way in relation to Clover of any sort, what reason can be assigned why grass-seeds only are not to be sown pure?

Others say, that it is better to have a mixture of different seeds. Be it so. But is not a mixture by choice more likely to be proper than one by chance? Especially after a sufficient experience has been had of the particular qualities of each sort, the kind of cattle each grass is most adapted to, the different grounds where they will thrive best, &c. all which circumstances are now in general little attended to, though of the utmost consequence.

The

The sowing of seed from a foul hay-rick is indeed such a slovenly method of proceeding, as one would think could not possibly prevail universally; yet this is the case as to all Grasses except the perennial Darnel or Ray-grass. Now would the husbandman be at the pains of separating once in his life half a pint or a pint of the different kinds of grass-seeds, and take care to sow them separately; in a very little time he would have wherewithal to stock his farm properly, according to the nature of each soil, and might at the same time spread these seeds separately over the nation by supplying the seed-shops.

The number of Grasses best adapted to cultivation is small; perhaps half a dozen or half a score at most; and how small the trouble would be of collecting such a number, and how great the benefit, must surely be obvious to every one at first sight. Or if it be thought too great a labour to collect the seeds separately, nothing can be more easy than to adopt the method recommended by Mr. Miller, of selecting patches in pastures that are free from weeds, and where one of the best sorts of grass predominates; to let it stand till the seed is ripe, and then if it be of a sort that sheds the seed easily, to mow it early in the morning, and not to make it as hay, but only when it is dry on one side, to turn it over gently on the other, and to thresh it, if convenient, on the spot.

Mr. Stillingfleet, in his Observations on Grasses, has selected eleven species, and given figures of them.

1. *Vernal Grass*, common on dry hills, on sound rich meadow land, and also in woods. It is very early, and likely to be a good grass for sheep pastures. It is very easy to gather, for it sheds its seeds upon the least rubbing. It gives a grateful odour to hay. See *Anthoxanthum odoratum*.

2. *Meadow Fox-tail Grass*, found in great plenty in the best meadows about London, and makes very good hay. Linneus says it is proper to sow on grounds that have been drained. It may be gathered at any time of the year from hay-ricks, for it does not shed its seeds without rubbing. See *Alopecurus Pratensis*.

3. *Fine Bent Grass*, in great plenty on the best sheep pastures. See *Agrostis capillaris*.

4. *Mountain Hair Grass*, abundant also in similar situations. See *Aira montana*.

5. *Silver Hair Grass*, in the same kinds of pastures. See *Aira caryophylla*.

6. *Great Meadow Grass*, which together with the narrow-leaved sort is common in the best meadows, and makes both good pasture and hay. See *Poa pratensis*, *angustifolia* and *compressa*.

7. *Annual Meadow Grass*, makes the finest turf. It grows every where by way sides, and on rich sound commons. In some parts it is called *Suffolk Grass*. See *Poa annua*.

8. *Sheep's Fescue Grass*, so much esteemed for sheep, and common on sheep downs. See *Festuca ovina*.

9. *Purple Fescue Grass*, on sheep downs, with fine bent and silver Hair-Grass. See *Festuca rubra*.

10. *Flote Fescue Grass*, a very fattening grass when growing in water. See *Festuca fluitans*.

11. *Crested Dog's-tail Grass*, proper for parks, and for sheep, and making a fine turf upon dry, sandy or chalky soils. See *Cynosurus cristatus*.

Besides these, Mr. Stillingfleet mentions, but does not figure—

12. *Yellow Oat Grass*, likely to be fit for sheep, and not uncommon in good meadows. See *Avena flavescens*.

13. *Perennial Darnel or Ray Grass*, well known, and cultivated all over England. See *Lolium perenne*.

The above grasses come into ear between the beginning of may and the middle of june, in the following order.

1. Annual Meadow. 2. Meadow Fox-tail. 3. Vernal. 4. Great Meadow. 5. Narrow-leaved Meadow. 6. Crested Dog-tail. 7. Sheep's Fescue. 8. Purple Fescue. 9. Fine Bent. 10. Marsh Bent. 11. Silver Hair. 12. Yellow Oat. 13. Flote Fescue.

Mr. Curtis, who has bestowed much attention, and tried many experiments on this subject, remarks, that although it is an opinion which has long prevailed

among many of the more enlightened agriculturists of the present age, that much of our meadow and pasture land may be rendered far more valuable than it is at present, by the introduction of some of our best grasses; that although Stillingfleet and others have endeavoured to excite the husbandman to collect and cultivate grass-seeds, by writings fraught with the soundest reasoning; and the Society for the encouragement of Arts, Manufactures and Commerce have attempted to attract him by the offers of well-directed premiums: yet hitherto they have not been productive of the desired effect; Ray-grass, with very few exceptions, continuing still to be the only grass whose seeds can be purchased for laying down land.

This Grass, not being superior to all others, even inferior to some, and not being adapted to every soil and situation, Mr. Curtis has judiciously selected six of the best sorts of Grasses, adapted to ground of different quality. 1. *Anthoxanthum vernum*, or Sweet-scented Vernal-Grass, figured in t. 1. The earliest of all our grasses, next to *Cynosurus coeruleus*: it will grow in any soil or situation; cattle are fond of it: but it is not so productive in point of crop as some others, and it yields the fewest seeds.

2. *Alopecurus pratensis*, or Meadow Fox-tail Grass, figured in t. 2. Almost as early as the foregoing, much larger, and of quicker growth; consequently much more productive; it shoots very rapidly after mowing, producing a very plentiful aftermath.

3. *Poa pratensis*, or Smooth-stalked Meadow Grass, figured in t. 3. The foliage shoots early, but the flowering-stems are not produced so soon, by a week at least, as the foregoing. Where early grass pasturage is desired, it cannot better be obtained than by a combination of these three; if crop be an object, this will have the preference.

Smooth-stalked Meadow-Grass rather affects a dry situation, and hence keeps its verdure in long-continued dry weather better than most others: it will grow on the top of a wall, but more luxuriantly in a rich meadow: it has a root which creeps like Couch Grass, and is almost as difficult to extirpate; it ought therefore to be introduced with caution where the pasturage is not intended to be permanent.

4. *Poa trivialis* or Rough-stalked Meadow-Grass, figured in t. 4. loves moisture and a sheltered situation; hence though few Grasses are more productive or more adapted to hay or pasturage; it is tender, and liable to be injured by severe cold or excessive drought. It is a principal grass in that uncommonly productive meadow near Salisbury, mentioned by Stillingfleet, and more particularly described in the Memoirs of the Bath Agricultural Society, vol. 1. p. 94.

The seeds of these two Grasses are apt to be entangled with each other, as if cobwebs had been intermixed with them, which makes it difficult to disperse them evenly in sowing.

5. *Festuca pratensis*, or Meadow Fescue Grass, figured in t. 5. comes nearest to Ray Grass, to which however it is much superior. It is larger, and more productive of foliage; is strictly perennial; very hardy, and will thrive not only in very wet, but also in dry ground; it produces more seeds than any of the others, which are easily gathered, and readily grow. The flowering stems are a fortnight or three weeks later than Meadow Fox-tail; yet it cannot be considered as a late Grass, for most of the *Agrostis* genus and Meadow Cat's-tail (*Phleum pratense*) flower at least three weeks later.—*Festuca elatior* is very similar to this, but much coarser.

6. *Cynosurus cristatus*, or Crested Dog's-tail Grass, figured in t. 6. grows in dry situations, and will not thrive in wet meadows. It flowers about the same time as Meadow Fescue Grass, and is not very productive of foliage: the stems also are wiry, and the roots penetrating to no great depth, in dry summers it becomes little better than an annual. Its seeds may easily be collected where the grass is fed, for the stalks are never touched by cattle.

Of the above six Grasses the second and fourth are fittest for moist land: the first and fifth for land moist, or moderately dry: the third and sixth for dry pasture.

The

The order of their flowering is as follows: 1. Vernal.
2. Meadow Fox-tail. 3. Smooth-stalked Meadow.
4. Rough-stalked Meadow. 5. Meadow Fescue.
6. Crested Dog's-tail.

To these six Grasses we may add: 7. *Avena elatior* or Tall Oat Grass. Early, very productive, and producing a plentiful aftermath; in excellence approaching to *Alopecurus pratensis*, for which it may prove no bad substitute.

8. *Avena flavescens* or Yellow Oat Grass; affecting dry soils, rather early, and tolerably productive.

9. *Bromus mollis* or Soft Brome Grass: as an early Grass it might perhaps be cultivated to advantage; but with other grasses it sheds the seeds and withers, before the whole is ready for mowing.

10. *Cynosurus cæruleus* or Blue Dog's-tail Grass, is the earliest of all our grasses, but not productive, or of a good quality.

11. *Dactylis glomeratus*, or Rough Cock's-foot Grass, a rough coarse Grass, extremely hardy and productive, common in orchards and meadows, and rather early.

12. *Festuca ovina* or Sheep's Fescue Grass; native of dry elevated heaths and commons; unproductive, with hard and wiry foliage; a small plant even in a rich moist soil.

13. *Hordeum murinum*, Wall Barley Grass, or Squirrel-tail Grass. Common by walls and the side of paths. Among Hay very injurious to horses, by the awns or beards of the ears sticking in their mouths.

14. *Hordeum pratense* or Meadow Barley Grass; taller and more delicate; sometimes forming great part of the crop in good meadows; neither early nor very productive: it may possibly have the same bad quality as the foregoing.

15. *Holcus lanatus*, or Meadow Soft Grass. Hardy and productive; flowering a month later than the *Anthoxanthum*; foliage soft and woolly.

16. *Holcus mollis*, or Creeping Soft Grass. Grows well in sandy soils, and bears drought.

17. *Lolium perenne*, or Ray Grass, wiry with little foliage in upland pastures; but in rich meadows its foliage is abundant and of rapid growth.

18. *Poa annua*, or Dwarf Meadow Grass; perpetually flowering and feeding most rapidly, unless prevented by cold; growing in almost any soil and situation, but never acquiring any great height; its foliage tender and grateful to cattle, but liable to be killed by winter's frost, and summer's drought.

19. *Phleum pratense*, or Meadow Cat's-tail Grass, imported from America under the name of Timothy Grass; in wet situations very productive, but coarse and late; it has no excellence which *Alopecurus pratensis* does not possess in an equal or superior degree.

20. *Triticum repens*, Creeping Wheat Grass, Quick, Quich or Couch Grass. Too well known to farmers and gardeners as a most troublesome weed. Its foliage is early.

Directions for sowing Grass Seeds.

Having gathered the spikes or panicles of any among the above grasses which you are desirous of cultivating, when they are sufficiently ripe, and having threshed or rubbed out the seeds; sow them the end of august or beginning of september, in rows nine or twelve inches apart, on a piece of clean ground, well dug, levelled and raked; cover the drills over lightly: if the weather be not uncommonly dry, the seeds will quickly vegetate, and the only attention they will require will be to weed them carefully: in a fortnight such as are too thick may be thinned, and those which are taken up transplanted, to make more rows of the same grass.

During the first dry weather in the spring roll or tread the rows down, to fix the roots, which are generally loosened by the frost, and weed them. As the spring advances, many of them will throw up their flowering stems, and some will continue to do so all the summer. As the seed ripens, gather it carefully, and sow it in the autumn, at which time the roots of the original plants, which will now bear separating, may be divided and transplanted; and thus by degrees a large plantation of these grasses may be formed, par-

ticularly of the smooth-stalked Meadow-grass, which creeps very much at the root.

While the seeds are thus increasing, the ground to be laid down may be got in order, either by paring and burning, or by ploughing and harrowing, burning the roots of Quich and other weeds. Some cleansing crop, as Potatoes, Turneps, Tares, &c. will contribute to bring the ground into order for this purpose, if otherwise not sufficiently clean.

The land may now be sown with Grass seeds in the following proportion. Meadow Fox-tail and Meadow Fescue, each one pint. Smooth-stalked and Rough-stalked Meadow, each half a pint. Crested Dog's-tail and Vernal, each a quarter of a pint. Dutch or White Clover, and either Wild Red or Broad Clover, each half a pint. For wet or strong land Crested Dog's-tail and Smooth-stalked Meadow may be omitted, especially the former.

Such a composition as this, sown in the proportion of three bushels to an acre, on a suitable soil, in a favourable situation, will in two years form a most excellent meadow; and being made up of hardy perennials, their places will not easily be usurped by any noxious plants, which may be brought in by dung or any other means.

For farther information on the management of grass land, see MEADOW and PASTURE.

GRASS, Arrow-headed. See *Triglochin*.

Barley. See *Hordeum*.

Bent. See *Agrostis*.

Brome. See *Bromus*.

Canary. See *Phalaris*.

Cat's-tail. See *Phleum*.

Cock's-foot. See *Dactylis*.

Cotton. See *Eriophorum*.

Couch. See *Triticum*.

Darnel. See *Lolium*.

Dog's. See *Triticum*.

Dog's-tail. See *Cynosurus*.

Feather. See *Stipa*.

Fescue. See *Festuca*.

Five-leaved. See *Potentilla reptans*.

Fox-tail. See *Alopecurus*.

Hair. See *Aira*.

Hard. See *Dactylis*.

Hard, Sea. See *Ægilops* or *Rottboellia*.

Knot. See *Polygonum*.

Lyme. See *Elymus*.

Manna. See *Festuca fluitans*.

Marl. See *Trifolium flexuosum*.

Mat. See *Nardus*.

Meadow. See *Poa*.

Melic. See *Melica*.

Millet. See *Milium*.

Oat. See *Avena*.

Orchard. See *Dactylis*.

Panic. See *Panicum*.

Pepper. See *Pilularia*.

Quaking. See *Briza*.

Quich or Quick. See *Triticum*.

Ray. See *Lolium*.

Reed. See *Arundo*.

Rye. See *Hordeum secalinum*.

Scurvy. See *Cochlearia*.

Soft. See *Holcus*.

Spiked. See *Triglochin*.

Spring. See *Anthoxanthum*.

Three-leaved. See *Trifolium*.

Timothy. See *Phleum pratense*.

Vernal. See *Anthoxanthum*.

Vetch. See *Lathyrus Nissolia*.

Viper's. See *Scorzonera*.

Wheat. See *Triticum*.

Wrack. See *Zostera*.]

GRATIOLA. (Dimin. from *gratia*; on account of its supposed medicinal good qualities.)

Lin. gen. n. 29. Reich. 30. Schreb. 36. Gronov. 6.

Gertn. t. 53. Juss. 121. Moniera. Broton. jam.

t. 28. f. 3. Ebrēt. t. 14.

* Curtis's Practical Observations on British Grasses, Lond. 1790. 8°.

Class. 2. 1. Diandria Monogynia.

Nat. order of *Personatae*.—*Scrophulariæ*. Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted, upright: segments awl-shaped, permanent.

COR. monopetalous, unequal: tube longer than the calyx: border four-parted, small; the upper segment broader, emarginate, reflex, the rest straight, equal.

STAM. Filaments four, awl-shaped, shorter than the corolla, the two lower shorter than the others, and barren; the two upper fastened to the tube of the petal. Anthers roundish.

PIST. Germ conic. Style straight, awl-shaped. Stigma two-lipped, after fecundation converging.

PER. Capsule ovate, acuminate, two-celled, two-valved.

SEEDS very many, small.

OBS. The essence of the character consists in the two barren anthers.

G. Monnieria has anthers to all the filaments, and a capitate stigma.—G. rotundifolia has a compressed, roundish capsule, and two stamens.—

G. officinalis has seven leaves to the calyx, the two outer patulous.

ESSENTIAL CHARACTER.

Cal. seven-leaved, the two outer leaves patulous. Cor. irregular, reversed. Stam. two, barren. Caps. two-celled.

SPECIES.

1. *Gratiola officinalis*. *Officinal Gratiola*, or *Hedge-Hyssop*, *Water-Hyssop*.

Lin. spec. 24. *Reich.* 1. 47. *mat. med.* 38. *Woodw. med. bot.* 132. *t.* 47. *Hall. herb. n.* 329. *Scop. carn. n.* 27. *Pollich pal. n.* 23. *Krock. filif. n.* 37. *Allion. pedem. n.* 261. *Fl. dan. t.* 363. *Sabb. hort. 2. t.* 87. *Fungib. offic. cent. 1. f.* 4. *Plenck, ic. t.* 15.

Gratiola. Rivin. mon. t. 157. *Blackw. t.* 411. *Ger. 466. emac.* 581. 1. *Bauh. hist. 3. 434. t.* 435. *Raii hist.* 1885.

G. centauroides. *Bauh. pin.* 279.

G. vulgaris. *Park. theat.* 220. 1. *Mor. hist. 2. 479. n. 7. f.* 5. *t.* 8. *f.* 7.

β. G. alpina. *Bauh. hist. 3. 435. Raii hist.* 1885. *Leaves lanceolate serrate; flowers peduncled.*

- [2. *Gratiola Monnieria*. *Thyme-leaved Gratiola*.

Lin. spec. 24. *yst.* 64. *Reich.* 1. 47. *amæn.* 4. 306. *Jacqu. obs.* 4. *t.* 1. *Swartz obs.* 15.

Moniera. Brown. jam. 269. *Ekret. pict. t.* 14. *f.* 2.

Anagallis cœrulea, &c. Sloan. jam. 1. 203. t. 129. *f.* 1.

Leaves oval-oblong, peduncles one-flowered, stalk creeping.

3. *Gratiola repens*. *Creeping Gratiola*.

Swartz prodr. 14.

Leaves ovate, stem creeping, calyx five-leaved, style bifid.

4. *Gratiola rotundifolia*. *Round-leaved Gratiola*.

Lin. syst. 64. *Reich.* 1. 47. *mant.* 174. *Rheed. mal. 9. 111. t.* 57.

Leaves ovate three-nerved.

5. *Gratiola hyssopoides*. *Hyssop-leaved Gratiola*.

Lin. syst. 64. *Reich.* 1. 48. *mant.* 174. *Retz. obs.* 4. 8. *n.* 6. *Pluk. alm. t.* 193. *f.* 2. *Lour. cochinch.* 22?

Leaves ovate-lanceolate subserrate much shorter than the internodes.]

6. *Gratiola virginica*.

Lin. spec. 25. *yst.* 64. *Reich.* 1. 48. *mant.* 317. *Gertn. fruct.* 1. 251. *Pluk. alm. t.* 193. *f.* 2. *Rheed. mal. 9. 165. t.* 85.

Leaves lanceolate obtuse somewhat toothed.

7. *Gratiola peruviana*.

Lin. spec. 25. *Reich.* 1. 48. *Feuill. peruv. 3. t.* 47. *Flowers subsessile.*

- [8. *Gratiola Lobelioides*.

Retz. obs. 4. 7. *n.* 2.

G. rugosa. *Lour. cochinch.* 23.

Stem almost naked, stipuled, leaves oblong quite entire, panicle dichotomous, capsules subglobular.

9. *Gratiola grandiflora*. *Great-flowered Gratiola*.

Retz. obs. 4. 8. *n.* 3.

Stems decumbent, leaves ovate serrate, peduncles opposite, capsules subulate.

10. *Gratiola veronicifolia*. *Veronica-leaved Gratiola*.

Retz. obs. 4. 8. *n.* 4.

Ruellia antipoda. Lin. mant. 422. *Rumph. amb.* 5. 460. *t.* 170. *f.* 2.

Stem creeping, leaves ovate-lanceolate sharply serrate, flowers terminating opposite.

11. *Gratiola oppositifolia*.

Retz. obs. 8. *n.* 5.

Stem ascending, leaves lanceolate serrate, peduncles opposite to the leaves.

12. *Gratiola stricta*.

Lour. cochinch. 23.

Leaves ovate, spike long terminating.

DESCRIPTIONS, &c.

1. Root perennial, creeping, thick, fleshy, with many slender fibres. Stalks several, upright, a foot or more in height, smooth, jointed. Leaves opposite, sessile, pointed, bright green, smooth, two inches long, and two lines or more in breadth, with a few small serratures towards the end. Flowers solitary, axillary, upright, on peduncles half an inch long, appearing in June or July, and continuing to August: calyx usually seven-cleft: corolla shaped like that of the Foxglove; but small and of a pale yellowish colour, or pale purple with red streaks; sometimes white: the throat is hairy.

Native of the South of Europe, in pastures, usually such as are moist. Common in many parts of Switzerland, Carniola, Austria, in the Palatinate, Silesia, France, about Turin, Padua, and in other parts of Italy.

It has a strong bitter nauseous taste, and is much recommended by several eminent medical writers in dropical cases. It is a powerful cathartic, but is said generally to occasion vomiting.

On account of its bitterness, cattle reject it; inso-much that Haller assures us there are meadows about Yverdun entirely useless from the abundance of this plant.

It was cultivated in our gardens as early at least as 1568^a.

2. Root jointed, creeping, with small fibres. Stalk herbaceous, inclined to be simple, round, leafy, smooth, somewhat erect, declining at bottom. Leaves subsessile, opposite, oblong or obovate, entire, smooth, nerveless, somewhat succulent. Peduncles longer than the leaves, filiform, solitary, axillary, one-flowered. Calyx seven-leaved; the three outer leaflets subcordate, acuminate, converging, the two inner linear, acute, pale, when the corolla falls embracing the germ, the two outmost lower, lanceolate, spreading. Corolla blue, inclined to bell-shape, a little flattened, five-cleft; the divisions nearly equal; the three upper ovate, spreading; the two lower converging, somewhat bent down. Filaments two, shorter by half than the other two: anthers ovate, blue^b.

This small, creeping plant sticks very close to the ground, and casts a few slender fibres from every joint, as it creeps. The whole plant seldom exceeds seven or eight inches in length, but it generally grows in beds, and spreads thick upon the ground, throwing out a few simple side-branches, which give it a pretty appearance when it flowers, and make it exceedingly remarkable^c.

Native both of the East and West Indies, and the South Sea islands: in low moist soils. It was introduced in 1772, by Mons. Richard; and flowers from July to September^d.

The name of *Monnieria* was given to this plant in honour of Dr. De Monier by Mons. Bernard de Jussieu, who raised it in the botanic garden at Paris.

3. Native of Jamaica^e.

4. Stems a finger high, quadrangular, smooth, creeping at the base. Leaves opposite, sessile, obtuse, smooth, with one or two obscure serratures. Peduncles axillary, solitary, naked, alternate, one-flowered, longer than the leaves. Calyx five-parted. Stamens two. Capsules compressed, roundish.

Native of Malabar, in sandy grounds^f.

^a Hort. kew. from Turner's herbal, part 3. fol. 33.

^b Swartz obs.

^c Browne.

^d Hort. kew.

^e Swartz.

^f Linn. mant.

5. Annual. Stem filiform, upright, smooth, a foot high. Leaves opposite, sessile, smooth, with a serrature or two on the lowest. Peduncles axillary, alternate; solitary, one-flowered, several times longer than the leaves. Calyx very small. Corolla much larger than the leaves, ringent^g. Leaves usually ovate, especially the lower ones. The proportion of these to the internodes gives no constant character^h.

Native of the Rice-grounds of Tranquebar, in the East Indies.

6. Stem procumbent, varying much in size. Leaves opposite, sessile, ferrate towards the tip; sometimes trifid. Peduncles axillary, one-flowered. Capsule twice as long as the calyx, with the style permanentⁱ. Calyx five-parted, with two accessory leaflets at the base. Capsule subglobular, with a furrow on each side; the valves often bifid at the tip. Partition simple, parallel to the valves, and inserted into their future^k.]

The corolla is white, and the flowers are not followed by seeds in England. It grows naturally in North America, in moist places, where it rises more than a foot high, but here not more than eight inches. [It is also native of Malabar.

Mr. Miller cultivated it in 1759.]

7. This plant grew here about nine inches high, with a weak stalk. Leaves opposite, ferrate, three quarters of an inch long, and half an inch broad. The flowers come out single on each side the stalk, they are white and much smaller than those of the common sort. Mr. Miller received the seeds from Carthagenia in New Spain, where it was found in places where there had been standing waters, which were then dried up. [He cultivated it in 1759; but the seeds not ripening it was soon lost.

8. Roots numerous, in bundles, short, simple. Stalk simple, upright, round, having an obscure, broad furrow on each side, slightly streaked, smooth, with five stipuled joints, a foot high. Leaves above the second or third pair opposite, sessile, upright; with the tips a little bowed back, acute, slightly streaked, smooth on both sides, an inch long, sometimes coloured at the base, especially underneath. Stipules two opposite, growing close at the joints, sessile, half ovate, pressed close, acute, quite entire, smooth, somewhat fleshy, greener than the stalk and leaves, small. Panicle terminating, lax, thin, with peduncles mostly simple, alternate, remote, round, smooth, or sometimes with a few scattered hairs, slender, nearly equal, with bractes at the base, reddish green. Pedicels longer than the flower. Bractes like the stipules, only a little narrower, small. Flowers inferior. Calyx bell-shaped, smooth, small, shorter than the tube of the corolla; segments pressed close, oblong, unequal, the two upper ones a little larger, more rounded at the tip. Corolla, tube streaked with a darker colour: border bell-shaped, the upper segment scarcely ascending, obcordate, flattish, shorter than the others, blue, the side ones straight, obliquely retuse at the ends, a little longer than the upper one, and of the same colour, the lower one spreading, obcordate, flattish, adorned with a white heart-shaped spot and a few blue dots, and twice as large as the others; throat naked, a little flattened. Filaments two remote, within the throat, growing to the tube, upright at the base, a little twisted at the tips, smooth, short, brownish-green, having a beard of short silky white hairs at the base: anthers connate, each double and before flowering time distinct; each part oblong, upright, sharp at both ends, yellow, two-celled: between these are the rudiments of two other stamens close together, flat, running straight down, very minutely bearded with snow-white hairs, sometimes hardly distinguishable. Germ superior, ovate, smooth, with a small furrow on each side. Stigma below the anthers, peltate, suborbiculate, large, a little concave, smooth, entire in front, but having two notches behind; between the notches are twin callous straight toothlets; close to each tooth a white hardish callus. Capsule smooth, with a small furrow, twice as long as the calyx: seeds oblong, sharp at both ends,

^g Linn. mant.

^h Retz.

ⁱ Linn. mant.

^k Gartner.

a little wrinkled, fastened to a two-parted receptacle. Very common near Tranquebar, in rice fields^l.

9. Stems bifid, angular, smooth. Leaves opposite, ferrate, often crenate, smooth. Flowers large in proportion to the other parts. Capsules long.

Native of Tranquebar, Madras, Siam, Malacca, in moist fat soils.

10. Stems angular, diffused, procumbent. Leaves opposite, sessile. Flowers small, deep blue, bracted and peduncled. Calyx five-cleft, linear. Capsule subulate.—With the foregoing.

11. Stems seldom upright, quadrangular, streaked. Leaves naked, the lower ones opposite; the axils usually branch-bearing; the upper ones alternate. Capsules long, subulate.

Native of Tranquebar in rice-grounds and moist places^m.

12. Stem suffruticose, quite simple, erect, a foot and half high. Leaves acuminate, subferrate, flat, smooth, opposite. Flowers white dotted with red, sessile, in a simple erect spike. Calyx none except a triple bracte under the flower. Corolla with a long slender angular tube, and a two-lipped, five-cleft spreading border. Capsule oblong, acuminate, sinuate in the middle, compressed, two-seeded.

Native of Cochinchinaⁿ.]

PROPAGATION AND CULTURE.

The first and fifth sorts are easily propagated by parting the roots in autumn, when the stalks decay; the plants should have a moist soil and a shady situation, for in dry ground they often decay in summer, unless they are plentifully watered. [The other sorts are natives of hot climates, and little known in Europe.

GRATIOLE. See *Hottonia indica*, *Lindernia*, *Mimulus*.

GRATIOLE AFFINIS. See *Capraria*, *Dianthera*, *Juscicia*.]

GRAVEL and Grass are the glory of English gardens, and things in which we excel all other nations.

There are different sorts of Gravel, but for those who can conveniently have it, I approve of that Gravel on Blackheath, as preferable to most that we have in England; it consisting of smooth even pebbles, which, when mixed with a due quantity of loam, will bind exceeding close, and look very beautiful, and continue handsome longer than any other sort of Gravel which I have yet seen.

Some recommend a sort of iron-mould Gravel, or Gravel with a little binding loam amongst it, than which nothing, they say, binds better when it is dry; but in wet weather it is apt to stick to the heels of one's shoes, and will never appear handsome.

Sometimes loam is mixed with Gravel that is over sandy or sharp, which must be very well blended together, and let lie in heaps, after which it will bind like a rock.

There are many kinds of Gravel which do not bind, and thereby cause a continual trouble of rolling, to little or no purpose; as for such,

If the Gravel be loose or sandy, you should take one load of strong loam, to two or three of Gravel, and so cast them well together, and turn this mixture over three or four times, that they may be well blended together; if this is done in proper proportion, it will bind well, and not stick to the feet in wet weather.

There are many different opinions about the choice of Gravel; some are for having the Gravel as white as possible, and in order to make the walks more so, they roll them well with stone rollers, which are often hewn by the masons, that they may add a whiteness to the walks; but this renders it very troublesome to the eyes, by reflecting the rays of light so strongly, therefore this should ever be avoided; and such Gravel as will lie smooth, and reflect the least, should be preferred.

Some screen the Gravel too fine, which is an error; for if it be cast into a round heap, and the great stones only raked off, it will be the better.

Some are apt to lay Gravel-walks too round, but this is likewise an error, because they are not so good to walk upon, and besides, it makes them look narrow; one inch rise is enough in a crown for a walk of five

^l Koenig in Retz.

^m Retz.

ⁿ Loureiro.

feet; and it will be sufficient, if a walk be ten feet wide, that it lies two inches higher in the middle than it does on each side; if fifteen feet, three inches; twenty feet, four; and so in proportion.

For the depth of Gravel-walks, six or eight inches may do well enough, but a foot thickness will be sufficient for any; but then there should always be a depth of rubbish laid under the Gravel, especially if the ground is wet; in which case there cannot be too much care to fill the bottom of the walks with large stones, flints, brick rubbish, chalk, or any other materials which can be best procured, which will drain off the moisture from the Gravel, and prevent its being poachy in wet weather; but as it may be difficult in some places to procure a sufficient quantity of these materials to lay in the bottom of the walks, so there may be a bed of Heath, or Furze, which ever can be procured at the least expense, laid under the Gravel to keep it dry: and if either of these are used green, they will lie a long time, as they will be covered from air, and these will prevent the Gravel from getting down into the clay, and will always keep the Gravel dry; and where there is not this precaution in the first laying of the Gravel upon clay, the water being detained by the clay, will cause the Gravel to be poachy whenever there is much rain.

In making of Gravel-walks, there must be great regard had to the level of the ground, so as to lay the walks with easy descents towards the low parts of the ground, that the wet may be drained off easily; for when this is omitted, the water will lie upon the walks a considerable time after hard rains, which will render them unfit for use, especially when the ground is naturally wet or strong; but where the ground is level, and there are no declivities to carry off the wet, it will be proper to have sink-stones laid by the sides of the walks, at convenient distances, to let off the wet; and where the ground is naturally dry, that the water will soon soak away, the drains of the sink-stones may be contrived so as to convey the water in cesspools, from which the water will soak away in a short time; but in wet land there should be under-ground drains, to convey the wet off, either into ponds, ditches, or the nearest place to receive it; for where this is not well provided for, the walks will never be so handsome or so useful.

The month of march is the properest time for laying Gravel; it is not prudent to do it sooner, or to lay walks in any of the winter months before that time.

Some indeed turn up Gravel-walks in ridges in december, in order to kill the weeds; but this is very wrong, for besides that it deprives them of the benefit of them all the winter, it does not answer the end for which it is done, but rather the contrary; for though it does kill the weeds for the present, yet it adds a fertility to them, as to the great future increase of both them and Grass.

If constant rolling them after the rains and frost will not effectually kill the weeds and moss, you should turn the walks in march, and lay them down at the same time.

In order to destroy worms that spoil the beauty of Gravel, or Grass-walks, some recommended the watering them well with water in which Walnut-tree leaves have been steeped, and made very bitter, especially those places most annoyed with them; and this they say, as soon as it reaches them, will make them come out hastily, so that they may be gathered; but if, in the first laying of the walks, there is a good bed of lime rubbish laid in the bottom, it is the most effectual method to keep out the worms, for they do not care to harbour near lime.

[GREEK VALERIAN. See *Polemonium*.

GREENHOUSE and CONSERVATORY.

These are buildings erected on the best principles (*see the Plans*) for protecting and preserving such sorts of plants as are too tender to live in the open air.

Greenhouse.

The Greenhouse was originally a room in a garden, not far from the house, facing the south, and having

large windows from top to bottom, built for the reception of Oranges, Myrtles, and a few other plants which were brought from temperate climates. This building had no flues or contrivances of any sort for increasing the natural heat, but the air of the room was warmed merely by the sun.

A greater variety of curious exotic plants having been introduced into the English gardens soon after the middle, and towards the end of the last century, flues were added to the Greenhouse, and many improvements in the structure and contrivance of it were adopted.]

As to the length of the Greenhouse, says Mr. Miller, it must be proportioned to the number of plants it is to contain, or the fancy of the owner; but the depth should never be greater than the height in the clear, which in small or middling houses may be sixteen or eighteen feet, but for large ones from twenty to twenty-four feet is a good proportion: for if the Greenhouse be long and too narrow, it will have a bad appearance both within and without, nor will it contain so many plants, if proper room be allowed for passing in front, and at the back of the stands on which the plants are placed; and on the other hand if the depth of the Greenhouse be more than twenty-four feet, there must be more rows of plants placed to fill the house, than can with conveniency be reached in watering and cleaning; nor are houses of too great depth so proper for keeping of plants as those of moderate size.

The windows in front should extend from about one foot and a half above the pavement, to within the same distance of the ceiling, which will admit of a cornice round the building over the heads of the windows. As it is necessary to have these windows so long, it will be impossible to make them in proportion as to their breadth; for if the sashes be more than seven or seven feet and a half broad, they will be troublesome to move up and down, and their weight will occasion them to decay very quickly. The piers between the windows should be as narrow as is consistent with their necessary strength to support the building; for which reason stone is preferable, or hard well-burnt bricks. If these piers are made of stone, they should be two feet and a half in diameter, worked as columns cylindrical, whereby the rays of the sun will not be obstructed so much as if they were square: but if they are built of bricks, it will be proper to make them three feet in front; and they may be sloped off towards the inside to admit the sun.

If a house for tools, &c. be erected at the back of the Greenhouse, the back wall need not be more than two bricks and a half in thickness; but if not, it must be three bricks or three bricks and a half thick, to keep out the frost.

The floor of the Greenhouse may be laid with Bremen squares, Purbeck stone, or broad tiles; and must be raised two feet above the ground, where the soil is dry; but if the situation be moist and springy, the floor should be raised at least three feet above the surface; and if the whole be arched with low brick arches under the floor, it will be of great service in preventing the damps rising in winter, which are often very hurtful to the plants, especially in great thaws, when the air is often too cold to be admitted into the house, to take off the damps. Under the floor, about one foot from the front, a flue one foot in width, and two feet in depth, may be carried the whole length of the house; which may be returned against the back wall, and carried up in proper funnels adjoining to the tool house, three times over each other, by which the smoke may pass off. The fire-place may be at one end of the house, and the door at which the fuel is put in, as also the ash-grate, may be contrived to open into the tool-house, so that it may be quite hid from sight and be dry; the fuel also may be laid in the same shed, and thus will always be ready for use.

The wall on the back part of the house should be either laid over with stucco, or plastered with mortar and white-washed, to keep out the frost, which will penetrate through the walls, especially when it is attended with a strong wind.

To prevent frost from penetrating through the roof, reeds, heath or furze should be laid between the ceiling and

and the tiles; and care should be taken in framing the joints that the weight may not lie upon the cieling; for they should be laid a foot thick at least, as smooth as possible, and fastened down well with laths to prevent their rising, and then covered over with a coat of lime and hair, which will keep out the air, and also prevent mice and other vermin from harbouring in them, which, if left uncovered, they would certainly do.

In the Greenhouse there should be treffels, which may be moved in and out, upon which rows of planks should be fixed, so as to place the pots or tubs of plants in regular rows one above another, whereby the heads of the plants may be so situated, as not to interfere with each other. The lowest row of plants, or forwardest towards the windows, should be placed about four feet from them, that there may be a convenient breadth left next the glasses to walk in front; and the rows of plants should rise gradually from the first, in such a manner that the heads of the second row should be entirely advanced above the first, the stems only being hid; and at the back of the house there should be allowed a space of at least five feet, for the convenience of watering the plants, and to admit a current of air round them, that the damps occasioned by the perspiration of the plants may be the better dissipated, which by being pent in too closely often occasions a mouldiness upon the tender shoots and leaves, and when the house is close shut up, this stagnating rancid vapour is often very destructive to the plants; for which reason also they should never be crowded too close to each other, nor should succulent plants ever be placed among them.

[The plants are put into the Greenhouse in october, or as soon as the morning and evening frosts come on. In this situation they remain till the end of may or the middle of june, according to the season, when they are removed to the place where they are to stand through the summer. Much of their growth and success depends upon the choice of a sheltered and convenient situation for them at this season: it must not be exposed to the meridian sun, nor to the west or north winds, both which are extremely hurtful to them when first exposed, and again in the autumn. Here they must be refreshed with frequent waterings in dry weather at least three times a week.

Before the plants are removed out of the Greenhouse it is necessary to shift at least all the small plants: that is, to take them out of their pots, to cut off part of their roots round the ball of earth, and to put them again into the same pot if the plant is not in a healthy state; or, if it is, into one a size larger; shortening the irregular side branches as they may require, and tying them up neatly.

The mould into which the plants are to be shifted is of considerable importance. The best is to be obtained from commons where sheep and cattle pasture, particularly in low places, where the finest grass grows, and the soil is deepest. A foot of the top soil with the turf may be taken off, and if it be a sandy or hazel loam it will do alone; but if it be a strong loam, some sand and black peaty or moorish soil should be added. Such soils, laid in a heap for at least six of the winter months, and frequently turned over, will suit most Greenhouse plants.

Aloes, Mesembryanthemums, Ixias and such Liliaceous plants in general as are inhabitants of Exotic houses and Glass cases, require a soil which is a degree lighter, and which will not retain the water, but let it pass readily; and a little coal ashes at the bottom of each pot may be useful for this purpose.

The great number of Ericas or Heaths and other beautiful plants from the Cape of Good Hope, from America and Botany Bay delight and flourish in that sort of earth which comes nearest to their native soil. Thus the Heaths like a black peat or moorish soil; and the others that which is made a degree stronger with loam.

A Plan and Elevation of the Greenhouse, according to the latest modern improvements is given on the plate which accompanies this article, from a drawing made by Mr. Malcolm: in which

A is the Elevation.

B The Section of the west end.

CC are the fire-places in the ground plan.

DD the funnels of the Chimney.

E is the back wall.

FF the inside of the Greenhouse, where the Stages are to be erected.

GG are the Flues running under the footpath; with the manner in which they divide and pass into the funnels of the chimney.

H is the front wall.

The dimensions of the whole and all the parts are laid down exactly by a scale. The pediments, pilasters, columns, pateras, and other ornamental parts are to be of stone. On the top of the centre of each of the three end windows on each side of the pediment there should be a key-stone, with a head or other device; and from the pediment over each of the three windows there should be a festoon of flowers tied up over the centre of the windows. The pateras in the west end should be ornamented.

Conservatory.

Greenhouse and Conservatory have been generally considered as synonymous terms for a house of a certain construction, destined to the preservation of exotic plants through the winter. Their essential difference is this. In the Greenhouse, the trees and plants are either in tubs or pots; and are placed on stands or stages through the winter, till they are removed into some sheltered situation abroad for the summer. In the Conservatory, the ground plan is laid out in beds and borders, made up of the best compositions of soils that can be procured, three or four feet in depth. In these the trees and plants, taken out of their tubs or pots, are regularly planted, in the same manner as hardy plants are in the open air. Instead of taking out the plants in summer, as in the Greenhouse, the whole of the glass roof is taken off, and the plants are thus exposed to the open air; and at the approach of autumn frosts the lights are again put on, and remain so till the may or june following.

It is evident that the building here called a Conservatory may also be used as a Greenhouse at the discretion of the owner, by introducing stages instead of beds; and in that case the glass roof may be fixed.

On each side of the Conservatory, in the plan is a hot-house or stove, and a retiring room; and at the back of the whole is a house for the Gardener, and sheds or offices for tools and other utensils, for drying plants, feeds, &c. &c.

One of the hot-houses is furnished with a stage, and is appropriated to such plants as come from Africa, New South Wales, and the like climates; and is called a Dry Stove. The other has a bark-bed, for plants for the East and West Indies, or other hot climates, and which require a tan heat to plunge the pots in, and a greater degree of fire to keep up the heat of the stove to within a few degrees of their native climate; for it would be both imprudent and impossible to keep up the heat at all times to that of Jamaica. This is called a Bark Stove. See STOVES.

One of the retiring rooms may be fitted up as an Aviary; or they may both be omitted at the pleasure of the owner.

Explanation of the Plate containing the plan and elevation of a Conservatory, with two Stoves, Retiring Rooms, Gardener's House, and Offices for utensils, &c.

A Elevation of the Conservatory, two Stoves; and Retiring Rooms.

B Section of the west end of the Stoves, Retiring Room and Gardener's House.

C Section through the Conservatory and Gardener's House.

D Ground plan of the Gardener's House.

E E Retiring Rooms.

FF Offices for utensils, &c.

GG Beds for plants in the Conservatory.

H Walk through the Conservatory and Stoves.

II Area of the two Stoves.

The whole and all the parts are accurately drawn to a scale, which makes it unnecessary to give the dimensions.

sions. The buildings given in this plan, and which have been frequently executed by Mr. Malcolm, who furnished the drawings and descriptions for this work, are all in the same line.]

In Mr. Miller's plan, the Greenhouse or Conservatory is placed exactly fronting the south; one of the wings or stoves facing the south-east, and the other the south-west; so that from the time of the sun's first appearance upon any part of the building, until it goes off at night, it is constantly reflected from one part to the other, and the cold winds are also kept off from the front of the centre building. In the area many of the more tender exotic plants may be placed in the summer season, and in the spring, before the plants can be set out, the beds and borders of this area may be full of Anemonies, Ranunculuses, early Tulips, &c. which will be past flowering, and the roots fit to take out of the ground, by the time the plants are taken out. In the centre of this area may be a small basin of water, which will be very convenient for watering the plants, not only on account of its nearness, but because the water will be softened and warmed by the reflection from the glasses.

The wing facing the south-east should always be preferred for the warmest or bark stove, because the sun, at its first appearance in the morning, shines directly upon the glasses, and warming the air of the house, gives new life to the plants, after the long nights of the winter season.

In these buildings, if there are not sheds running behind them their whole length, the walls should not be less than three bricks thick; and if they are even more it will be better, because where the walls are thin and exposed to the open air, the cold will penetrate, and when the fires are made, the heat will come out through the walls, so that it will require a larger quantity of fuel, to maintain a proper temperature of warmth in the house; and in general the closer and better these houses are built, the less fuel will be required to warm them; so that the first expense in building them properly will be the cheapest, when the after expense of fires is taken into consideration.

Besides these buildings, it will be proper to have deep hot-bed frames, such as are commonly used to raise large annuals in the spring, into which may be set pots of such plants as come from Carolina, Virginia, &c. whilst the plants are too small to bear the open air; as also many other sorts from Spain, and the other southern countries of Europe, which require only to be screened from the violence of frosts, and should have as much free air as possible in mild weather; which can be no better effected than in one of these frames, where the glasses may be taken off every day when the weather will permit, and put on every night: and in hard frosts the glasses may be covered with mats, straw, peas-haulm, or the like; to prevent the roots of the plants from being frozen. If these pits be sunk a foot or more below the surface of the ground, it will be better, provided the ground be dry. The sides of the frame should be built with brick, and a curb of wood laid round on the top of the wall, into which the gutters whereon the glasses slide may be laid: the back wall may be four feet high, and two bricks and a half thick, the front one foot and a half; the width of the inside of the frame about six feet, and the length in proportion to the number of plants to be contained in it.

GREENWEED OF GREENWOOD. See *Genista*.

GREGGIA. See *Myrtus*.

GREWIA. (So named by Linneus, in honour of Nehemiah Grew, M. D. F. R. S. the famous author of the *Anatomy of Vegetables*, 1682. fol.)

Lin. gen. n. 1026. Reich. 1117. Schreb. 896.

Juss. 292. Gartn. t. 106. Mallococca. Forst. 39.

Class. 20. 7. Gynandria Polyandria—removed by Schreber into Polyandria Monogynia.

Nat. order of *Columniferae*. *Tiliaceae*. Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets lanceolate, upright, leathery, coloured within, spreading, deciduous.

COR. Petals five, the same form with the calyx, often smaller, emarginate at the base. Nectary, a scale in-

ferted into each petal at the base, thickish, bent in, inclined to a rim furrounding the style.

STAM. Filaments very numerous, the length of the petals, bristle-shaped, inserted into the base of the germ. Anthers roundish.

PIST. Germ pedicelled, roundish, fitting on a columnar, upright receptacle, surrounded by a five-cornered rim. Style filiform, the length of the stamens. Stigma obtuse, four-cleft.

PER. Berry four-lobed, four-celled.

SEEDS solitary, globular, one-celled.

ESSENTIAL CHARACTER.

Cal. five-leaved. Pet. five, with a nectareous scale at the base of each. Berry four-celled.

SPECIES.

1. *Grewia occidentalis*. Elm-leaved *Grewia*.
Lin. spec. 1367. Reich. 4. 66. hort. cliff. 433.
Willch. obs. n. 49. Dukam. arb. 1. 276. t. 108.
Pluk. alm. t. 237. f. 1. (Ulmifolia). Comm. hort.
1. 165. t. 85. Seba thes. 1. 46. t. 26. f. 3. Raii
dendr. 13. 4.
Leaves subovate, flowers solitary.
- [2. *Grewia populifolia*. Poplar-leaved *Grewia*.
Vahl symb. 1. 33.
Chadara tenax. Forsk. ægypt. 105. n. 23.
Leaves orbiculate, peduncles solitary one-flowered.
3. *Grewia orientalis*. Oriental *Grewia*.
Lin. spec. 1367. Reich. 4. 67. fl. zeyl. n. 324. hort.
cliff. 433. Gartn. fruct. 2. 112. Vahl symb. 1. 34.
Pluk. alm. t. 50. f. 4. Rheed. mal. 5. t. 46.
Raii hist. 1624. c. VII.
- β. *Frutex Ceramicus*. Rumph. amb. 4. 124. t. 60.
Leaves sub lanceolate, flowers solitary.
4. *Grewia lævigata*.
Vahl symb. 1. 34.
Leaves elliptic, acuminate, smooth on both sides, quite entire at the base, peduncles three-flowered.
5. *Grewia glandulosa*.
Vahl symb. 1. 34.
Leaves ovate-lanceolate, acuminate, smooth on both sides, glandular at the base; flowers solitary, subsessile.
6. *Grewia hirsuta*.
Vahl symb. 1. 34.
Leaves lanceolate-ovate soft, calyxes very hairy, peduncles three-flowered.
7. *Grewia excelsa*.
Vahl symb. 1. 35.
Chadara arborea. Forsk. descr. 105.
Leaves oblong, beneath tomentose hoary.
8. *Grewia asiatica*. Asiatic *Grewia*.
Lin. syst. 827. Reich. 4. 67. mant. 122. Vahl
symb. 1. 35.
Microcos lateriflora. Lin. spec. 734. fl. zeyl. n. 208.
Hamdamanias. Herm. zeyl. 3. Burm. zeyl. 113.
Leaves cordate.
9. *Grewia tiliæfolia*.
Vahl symb. 1. 35.
Leaves cordate-roundish smooth on both sides, peduncles shorter than the petiole.
10. *Grewia Malococca*. South-sea *Grewia*.
Lin. syst. 827. suppl. 409. Gartn. fruct. 2. 113.
Forst. fl. aust. n. 327.
Malococca crenata. Forst. gen. 39. Nov. act. upf. 3.
185.
Leaves cordate ovate-oblong crenate scabrous, pedicels axillary three-flowered, fruit tetracoccus.
11. *Grewia velutina*.
Vahl symb. 1. 35.
Leaves oval very soft on both sides hoary underneath, peduncles axillary about three together three-flowered.
12. *Grewia falvifolia*. Sage-leaved *Grewia*.
Lin. syst. 827. suppl. 409.
G. Damine. Gartn. fruct. 2. 113?
Leaves oblong quite entire, flowers axillary several pedicelled, petals bowed back linear.
13. *Grewia Microcos*.
Lin. syst. 827. Reich. 4. 67.
Microcos paniculata. Lin. spec. 733. fl. zeyl. n. 207.
Burm. zeyl. 159. t. 74. Rheed. mal. 1. 105. t. 56.
Leaves ovate-oblong, flowers panicked.]

1. This will grow to the height of ten or twelve feet, and has a stem and branches very like those of the small-leaved Elm, the bark being smooth, and of the same colour as that of Elm when young; the leaves are also very like those of the Elm, and fall off in winter: the flowers are produced singly along the young branches from the axils, and are of a bright purple colour; they appear towards the end of July, and continue through August to the beginning of September, but are never succeeded by fruit in this country.

[It appears from Plukenet that it was cultivated in 1692, in the Royal Garden at Hampton Court.

2. This is a branching shrub; the branches slender, smooth, ash-coloured. Leaves petioled, alternate, scattered, unequally and bluntly tooth-crenate, veined, very smooth above, scarcely pubescent beneath; hairs stellate visible only with a magnifier. Petiole filiform, the length of the leaves. Peduncle filiform, a little longer than the leaves, and from the same bud. Bractes in pairs, on the middle of the peduncle, deciduous. Calycine leaflets linear, obtuse, villose, smooth within, coloured. Petals linear, shorter than the calyx.—Allied to the foregoing, but of a looser habit, with the leaves hanging down like those of *Populus tremula*, having stellate hairs beneath: the flowers are a little smaller^a.

3. Allied to the first sort. It is a tree of a middling size. Leaves ferrate, petioled. Peduncles from the axils, tomentose, trifid, three-flowered^b. Berry sub-globular, depressed, becoming obtusely four-cornered in drying, succulent; the skin when fresh saffron-coloured, villose, flesh pulpy, fugacious, stones hard, like grape-stones, having a deep furrow on the back, two-celled. Seed one in each cell, that is, eight in a whole berry, obovate, compressed like a lens, somewhat livid or bay-coloured^c.

Native of the East Indies. Introduced in 1767, by Mr. William Malcolm. It flowers in July and August^d.

4. Branches with a purple bark dotted with white. Leaves on very short petioles, blunt, ferrate on the outside, from two to three inches long. Stipules awl-shaped pubescent. Peduncles axillary, solitary, four times as long as the petiole. Pedicels almost the length of the petioles. It differs from the next in having longer leaves, quite entire and without glands at the base, and three-flowered long peduncles.

Native of the East Indies, where it was observed by Koenig.

5. Branches somewhat rugged. Leaves acute, smooth, crenate, the three or five notches next the base glandular. Petiole short. Flowers axillary, on very short peduncles.

Native of the Isle of France.

6. Branches soft with hairs, especially at top. Leaves on very short petioles, acuminate, more villose underneath, unequally and sharply ferrate, an inch and half in length. Stipules bristle-shaped, the length of the petioles. Peduncles axillary, in threes; sometimes solitary. Flowers subsessile, with a three-leaved lanceolate involucre. Petals very short, oblong, ciliate.

Found by Koenig on the tops of mountains in the East Indies.

7. Leaves unequally and bluntly ferrate, the upper surface even, nerved and veined, the lower hoary. Peduncles axillary, often solitary, three-flowered; pedicels angular^e.

8. A tree with the branches scarcely tomentose. Stipules lanceolate. Leaves alternate, petioled, roundish, sharpish, five-nerved, scarcely lobed, tomentose underneath, the size of Apple-leaves. Petioles round, tomentose, one-fifth of the length of the leaves. Peduncles axillary, usually in fours, trifid, three-flowered, half the length of the leaves. Petals not bigger than the calyx. Berries small, red, acid.

Native of Surat^f.

9. Branches smooth, with a brown bark very minutely dotted with ash-colour, the younger ones sub-

villose. Leaves a hand breadth and more, nerved and veined, one lobe of the base a little shorter than the other, bluntly ferrate; the ferratures almost equal. Petioles powdered at the tip, scarcely thickened. Stipules half-cordate, acuminate, shorter than the petiole. Peduncles axillary, two or three together, three-flowered. Involucre three-leaved; leaflets lanceolate, obtuse, concave, the length of the pedicels. Calyx tomentose on the outside, smooth within, coloured. Germ on a short pedicel. Fruit two-grained.

Native of the East Indies^g.

10. The difference by which it may be known from the other species is with difficulty made out^h. It is distinct by having no scales to the petals, the germ sessile, and the stones or nuts not two-celledⁱ. The berry is obtusely four-cornered, depressed, scabrous on all sides with minute bristles: the stones are ovate-acuminate, turgidly lens-shaped, wrinkled and rough with very small tubercles, one-celled, thick and hard. Seeds solitary, and four in the whole berry, obovate, remarkably tapering downwards, somewhat livid^k.

Native of the islands of Tongatabu and Huaheine in the South Seas^l.

11. Stem shrubby. All parts of the plant very soft with nap. Leaves alternate, sometimes angular towards the tip; ferratures bluntish, remote, unequal. Petioles very short. Stipules bristle-shaped, deciduous. Peduncles the length of the petioles. Flowers smaller than in *G. asiatica*^m.

12. A shrub. Leaves petioled, tapering to both ends, obtuse, smooth above, hoary and veined underneath. Peduncles three or more, tomentose, short. Flowers upright. Calyx five-toothed, tomentose. Petals tomentose, upright, yellow, bifid at the tip. Filaments much bearded at the base, the other part smooth: anthers long, yellow. Stigma capitate, emarginateⁿ.

Native of the East Indies. Introduced in 1779, by John Gerard Koenig, M. D.

13. A tree. Leaves alternate, acuminate, very slightly crenate, nerved, petioled, roughish. Flowers terminating. Calyxes tomentose^o.

Native of the East Indies.]

PROPAGATION AND CULTURE.

1. The common *Grewia* may be propagated from cuttings or layers; the cuttings should be taken off, and planted in April, before the buds swell, for they do not succeed well after; these cuttings should be planted in small pots filled with loamy earth, and the pots should be plunged into a moderate hot-bed of tanners bark, where, if they are duly watered, and in the heat of the day shaded from the sun, they will take good root in about two months, and may then be gradually inured to bear the open air, into which they should be removed in June, and placed in a sheltered situation, where they may remain till autumn, when they must be removed into the green-house; the best time to lay down the layers of this plant is in the spring, before the buds come out, and these will be rooted by the same time the following year, when they may be cut off from the old plants, and planted each into a separate pot filled with a soft loamy soil.

The best time to remove or transplant this plant is, either in the spring, just before the buds begin to swell, or in autumn, when the leaves begin to drop; for in summer, when the plants are in full leaf, it will be very improper to disturb them.

In winter these plants should be placed in the green-house, for they are too tender to live abroad in England; but they should have as much free air as possible in mild weather; for they only require to be protected from frost, and after their leaves are fallen, they will require very moderate watering; but in summer they should be constantly watered three or four times a week in dry weather, and placed in a sheltered situation, with other hardy green-house plants, where they will add to the variety.

The other sorts being tender, will not live through the winter in England, unless they are placed in a warm

^a Vahl.

^b Linn. syst. and zeyl.

^c Gartner.

^d Hort. kew.

^e Vahl.

^f Linn. mant.

^g Vahl.

^h Linn. suppl.

ⁱ Jussieu.

^k Gartner.

^l Forster.

^m Vahl.

ⁿ Linn. suppl.

^o Linn. zeyl.

stove; nor do those plants thrive well, which are placed on shelves in the dry stove; therefore the only method to have them succeed, is to place them in the bark-bed in the tan-stove. In summer these plants require a good share of free air to be admitted to them, and should have water three or four times a week in warm weather; but in winter they must be sparingly watered, and require to be kept warm.

GRIAS. (*The name of a plant in Apuleius.*)

Lin. gen. 659. *Reich.* 715. *Schreb.* 892. *Juss.* 257.

Class. 13. 1. Polyandria Monogynia.

Nat. order of *Guttifera*, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, cup-shaped: mouth four-cleft finally lacerated.

COR. *Petals* four, roundish, concave, coriaceous.

STAM. *Filaments* numerous, setaceous, longer than the corolla, inserted into the receptacle. *Anthems* roundish.

PIST. *Germ* somewhat depressed, immersed in the calyx. *Style* none. *Stigma* thickish, four-cornered, hollowed out cross-wise.

PER. *Drupe* large, one-celled, acuminate at the base and tip.

SEEDS. *Nucleus* scored with eight furrows.

ESSENTIAL CHARACTER.

Cor. four-petalled. *Cal.* four-cleft. *Stigma* sessile, cross-shaped. *Drupe* with an eight-furrowed nucleus.

SPECIES.

1. *Grias cauliflora.* *Anchovy Pear.*

Lin. spec. 732. *Juss.* 492. *Reich.* 2. 583. *Swartz obs.* 216. *Brown. jam.* 245. (*Calophyllum.*) *Sloan. jam.* 2. 122. *t.* 216. & 217. *f.* 1, 2. (*Palnis affinis*).

DESCRIPTION, &c.

[This tree frequently grows to the height of fifty feet. Branches at the top, simple, short, or none. Leaves on short petioles, pendulous, two or three feet long, wedge-shaped at the base, oblong-attenuated, entire, marked with nerves and veins, wrinkled, smooth. Flowers from the stem, on very short, scaly, many-flowered peduncles: pedicels short, crowded, one-flowered. Corollas large, whitish. Calyx coriaceous, small, superior, the four clefts blunt. Filaments inserted into a square receptacle, united at the base in a five-fold row, bent in, the inner ones shortest. Drupe ovate, eight-furrowed, crowned with the calyx. Nucleus solitary oblong².

The uprightness of the growth, and the largeness of the leaves give this tree a very elegant appearance. The fruit is about the size of an alligator's egg, and much like it in shape, only a little more acute at one end, and of a brown russet colour. This beautiful tree is frequent in many parts of Jamaica, and grows, generally, in low moist bottoms, or shallow waters³.]

The fruit is pickled in the West Indies, and eaten in the same manner with the East Indian Mango, which it exactly resembles in taste.

PROPAGATION AND CULTURE.

Put the stones into the ground soon after the fruit is gathered, and keep the plants constantly in the bark-bed in the stove.

[In the West Indies the seeds grow very readily, wherever they meet with a sufficient quantity of moisture, and propagate so thick, that the trees are always found formed into thickets or large clusters⁴.

GRIELUM.

Lin. gen. n. 1235. *Reich. n.* 633. *Schreb. n.* 793. *Gartn. t.* 36.

Class. 10. 4. Decandria Pentagynia.

Nat. order of *Gruinales*.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, spreading, deeply five-cleft, flat at the base, sharp, equal, permanent.

COR. *Petals* five, spreading, large, obovate, sessile, tapering at the base.

Nectaries oblong glands, placed round the germ, and united so as to form a crown.

² Swartz.

³ Browne and Long, 811.

⁴ Browne.

STAM. *Filaments* ten, filiform, somewhat rigid, equal, permanent, the length of the calyx. *Anthems* ovate-oblong, upright.

PIST. *Germ* five, distinct, awl-shaped, upright, shorter than the stamens. *Styles* none, (five, G.) *Stigmas* warted.

PER. five, oblong, acuminate, hard. (Capsule formed from the calyx hardened, round, flattened, five or ten-celled, G.)

SEEDS solitary, oblong.

OBS. *It is not certain whether there be a difference of sex, or a withering of the pistil in some individuals.*

ESSENTIAL CHARACTER.

Cal. five-cleft. *Pet.* five. *Filam.* permanent. *Peric.* five, with one seed in each.

SPECIES.

1. *Grielum tenuifolium.*

Lin. syst. 431. *Reich.* 2. 387.

G. laciniatum. *Gartn. fruct.* 180.

Geranium grandiflorum. *Lin. spec.* 958. *Burm. ger.* 1. *Burm. afr.* 88. *t.* 34. *f.* 1.—145. *t.* 53. (*Ranunculo-platycarpus*).

DESCRIPTION, &c.

Petals blue, with livid-yellow claws. Capsule inferior, with the calyx closely adhering and serving as a bark to it at bottom, flattish at top, and surrounded with a ring of hard bony tubercles, within which it is crowned with the permanent filaments and styles; it has ten cells, but no valves: to each style there are two cells, but all of them are placed in a ring regularly round the axis of the fruit, and deeply immersed in the substance of the calyx. There is no receptacle, but the seeds are fixed to the tip of the cells, one only in each; the form is elliptic, beaked at top, plano-convex, or flattened lens-shaped, of a reddish chestnut colour⁵.

Native of the Cape of Good Hope.

GRIMMIA. (*So named in honour of Jo. Fred. Car. Grimm, Archiater at Gotha.*)

A genus in the order of Mosses, comprehending some Linnean species of *Bryum*. *Schreb. gen. n.* 1642.

GRISLEA. (*Named after G. Grisley, a Portuguese surgeon; author of Viridarium Lusitanicum. Ulyssip.* 1661. 8°.—republished by Seguier in 1749. *It is also in Ray's Sylloge Stirpium exterarum.*)

Lin. gen. 474. *Reich.* 510. *Schreb.* 642. *Juss.* 331.

Class. 8. 1. Octandria Monogynia.

Nat. order of *Calycanthemæ.* *Salicariæ,* *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, awl-shaped, inclined to bell-shape, upright, four-toothed, coloured, permanent.

COR. *Petals* four, ovate, from the incisures of the calyx, extremely minute.

STAM. *Filaments* eight, awl-shaped, upright, long, ascending. *Anthems* simple, upright, roundish.

PIST. *Germ* superior, globular, pedicelled. *Style* filiform, the length of the stamens. *Stigma* simple.

PER. *Capsule* globular, shorter than the calyx, one-celled.

SEEDS very many, roundish, very small. *Receptacle* large.

OBS. *Sometimes one-third part is added to the parts of the flower.*

ESSENTIAL CHARACTER.

Cal. four-cleft. *Pet.* four from the incisures of the calyx. *Filam.* very long, ascending. *Caps.* globular, superior, one-celled, containing many seeds.

SPECIES.

1. *Grislea secunda.*

Lin. spec. 496. *Reich.* 2. 155. *hort. cliff.* 146. *Loefl. it.* 245.

Leaves ovate-lanceolate, smooth, on short petioles, raceme terminating, flowers all facing one way.

2. *Grislea tomentosa.*

Roxb. corom. 2. 29. *t.* 31.

Lythrum fruticosum. *Lin. spec.* 641. *Reich.* 2. 427.

Seringie of the Telingas.

Leaves half-lanceolate with a cordate base, whitish beneath, sessile; racemes axillary short.

⁵ Gærtner.

DESCRIPTION, &c.

1. This is a tree with round branches: Leaves like those of Bay, opposite, quite entire, with alternate nerves. Raceme simple, bent outwards; the length of the leaves, covered with numerous flowers, on pedicels the length of the calyx, all bent upwards in one row. Calyxes green, turbinate. Petals scarcely conspicuous. Stamens very long, purple. Anthers fulvous.

Native of South America^t.

2. Stem and principal branches erect; smaller ascending; bark rust-coloured. Leaves opposite, two-faced, acute, smooth above. Racemes bearing from five to fifteen flowers, which are pretty large, red and permanent. Calyx red, six-toothed, equal, permanent. Petals six, small, lanceolate. Filaments equal, inserted into the calyx near its base. Stigma oblong. Capsule covered with the coloured permanent calyx.

It is a beautiful flowering shrub, a native of the hills and valleys through the northern provinces of the Carnatic in the East Indies. The bright-red calyx, retaining its colour till the seeds are ripe, gives this shrub a very showy appearance^u. According to Linneus, it is also a native of China.

GROMWELL. See *Lithospermum*.]

GRONOVIA. (The name was given to this genus by Dr. Houstoun, in honour of John Fred. Gronovius, M. D. a learned botanist at Leyden.)

Lin. gen. n. 282. Reich. 302. Schreb. 391. Houst. reliqu. 7. Juss. 394.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Cucurbitaceæ.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-cleft beyond the middle, bell-shaped, coloured, permanent; divisions semi-lanceolate, upright.

COR. Petals five, extremely minute, roundish, from the clefts of the calyx.

STAM. Filaments five, capillary, length of the corolla, inserted into the calyx, alternate with the petals. Anthers erect, twin.

PIST. Germ inferior. Style filiform, longer than the stamens. Stigma obtuse, (two-lobed, H.)

PER. Berry dry, roundish, coloured, one-celled. (Fruit five-ribbed, H.)

SEED single, roundish, large.

ESSENTIAL CHARACTER.

Petals five, together with the stamens inserted into the bell-shaped corolla. Berry dry, inferior, containing one seed.

SPECIES.

1. Gronovia scandens. Climbing Gronovia.

Lin. spec. 292. syst. 243. Reich. 1. 567. mant. 343. hort. cliff. 74. Mart. cent. 40. Amm. herb. 346.

DESCRIPTION, &c.

Gronovia is an annual plant, which sends forth many trailing branches like those of the Cucumber; closely set with broad leaves, in shape like Vine leaves; those on the stalk are covered with small spines, [or rather hooked hairs,] which sting like the Nettle: the branches have many tendrils, by which they fasten themselves to other plants, and thus will rise to the height of six or eight feet. The flowers are small, axillary and in bunches, of a greenish yellow colour, and make no great appearance.

[It has a strong smell. The leaves resemble those of Bryony, are rough and stinging. Peduncles many-flowered axillary. It may be doubted whether it is not more truly polypetalous, and allied to the Onagrace^x.]

This plant was discovered by Dr. Houstoun at La Vera Cruz, whence he sent the seeds to Europe about 1731.

PROPAGATION AND CULTURE.

This being a very tender plant, must be raised on a hot-bed early in the spring, and afterwards placed in the bark-stove, and treated in the same way as the Momordica. Thus it will produce ripe seeds; but no use of it being known, and having little beauty, it is not cultivated except in botanic gardens.

^t Linn. hort. cliff.

^u Roxburgh.

^x Jussieu.

[GROSSULARIA. See *Ceanothus asiaticus* (*Rhamnus lævigatus*), *Melastoma*. *Ribes*.

GROSSULARIÆ FRUCTU. See *Cactus Pereeskia* and *Melastoma*.

GROUND-IVY. See *Glechoma*.

GROUND-NUT. See *Arachis*.

GROUND-RATAN. See *Rhapis flabelliformis*.

GROUNDSEL. See *Senecio*.

GROUNDSEL-TREE. See *Baccharis*.

GRYLLUS. See *Andropogon*.

GUABI-POCACA-BIBA. See *Mimosa vaga*.]

GUAIBARA. See *Coccoloba*.

GUAIBO. See *Psidium pomiferum*.

GUAICANA. See *Diosporos*.

GUAIAIACUM. (From the Spanish. Guayacan, which is formed from the Indian Hoaxacan).

Lin. gen. n. 518. Reich. 561. Schreb. 727. Plum.

17. Loeffl. 219. Juss. 296. Gært. t. 113.

Class. 10. 1. Decandria Monogynia.

Nat. order of Gruinales. Rutaceæ, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets ovate-oblong, concave, obtuse, spreading, deciduous; the two outer ones a little smaller.

COR. Petals five, roundish-obovate, obtuse, concave, spreading, longer than the calyx, ending in short claws, inserted into the receptacle.

STAM. Filaments subulate, broader at the base, upright, shorter than the corolla, inserted into the receptacle. Anthers oblong, finally recurved.

PIST. Germ broader above, angular, pedicelled. Style short, subulate. Stigma simple, acute.

PER. Capsules two to five, (five-celled, G.) on very short pedicels, compressed, membranaceous, covered with a pulpy rind, gibbous on the outside, united on the inside, separating when ripe, gaping.

SEEDS solitary, bony, oblong.

ESSENTIAL CHARACTER.

Cal. five-cleft, unequal. Petals five inserted into the receptacle. Caps. angular, five-celled.

SPECIES.

1. Guajacum officinale. Official Guajacum, or Lignum Vitæ.

Lin. spec. 246. Reich. 2. 262. hort. cliff. 187. mat. med. 112. Plenck, ic. t. 331. Woodv. med. bot. 43. t. 16. Gært. fruct. 2. 148. Swartz obs. 168. Brown. jam. 225. Pluk. alm. t. 35. f. 4. Baub. pin. 448. 1. Sloan. jam. 2. 133. t. 222. f. 3—6. Seba thes. 1. 86. t. 53. f. 2. Blackw. t. 350. f. 1, 2. Clus. exot. 312. 314. Raii hist. 1685.

β. G. jamaicense, lentisci subrotundis fol. flore albo. Pluk. alm. 180. t. 35. f. 3.

Leaflets two pairs obtuse.

2. Guajacum sanctum.

Lin. spec. 547. Reich. 2. 262. Plenck, ic. t. 330. Comm. hort. 1. 171. t. 88. Baub. pin. 448. 2.

Lignum vitæ ex Brasilia. Blackw. t. 350. f. 3, 4.

Leaflets many pairs obtuse.

3. Guajacum afrum.

Lin. spec. 547. syst. 396. Reich. 2. 263. hort. cliff. 489. (Guilandinoides). Walth. hort. 2. t. 2. (Acacia). Boerb. lugdb. 2. 57. (Afra arbor).

Schotia speciosa. Ait. hort. kew. 2. 56. Jacqu. ic. 1. t. 75. collect. 1. 93.

Theodora speciosa. Medic. monogr. 16. t. 1.

Leaflets many pairs acute.

[4. Guajacum dubium.

Forst. fl. austr. n. 186.

Leaves conjugate oblong-lanceolate obtuse.

DESCRIPTIONS, &c.

These are trees, the timber of which is very hard. The leaves are abruptly pinnate. The peduncles axillary and one-flowered. The fruit of *G. officinale* is two-celled, compressed and obcordate: that of *G. sanctum* four or five-celled, with a sort of wing to each^a.]

1. The first is the common Lignum Vitæ or Guajacum, and becomes a very large tree, covered with a hard, brittle, brownish bark, not very thick: the wood is firm, solid, and ponderous, appearing very re-

^a Jussieu.

linous, of a blackish yellow colour within, and of a hot aromatic taste; the smaller branches have an ash-coloured bark.

[Leaves pinnate: leaflets two pairs, elliptic, sessile, entire, veined, shining. Peduncles terminating, round, shorter than the petioles, one-flowered. Calycine leaflets ovate, convex, pubescent. Petals ovate, entire. Filaments ten, contiguous at the base. Anthers incumbent, bifid at the base, yellow. Germ obcordate, compressed. Style permanent^b. Capsule subtrubinate (obcordate-angular, *Sw.*), on a very short pedicel, five-cornered, with very narrow winged ribs on the round back of the angles, succulent, smooth, pale ferruginous (or yellow) five-celled, (from two to five-celled, *Sw.*). Partitions quite simple, membranaceous, fixed to the middle of the cover. Seeds large, thicker and blunt above, attenuated below, convex on one side, angular on the other, rufescent. Two or three cells are frequently abortive, but the vestiges of them remain. The rind of the capsule is continuous, and the partitions indivisible; it is one therefore, and not several, as Schreber would have it^c.

[Browne describes it as an evergreen of a dark gloomy cast, continuing its verdure in the driest seasons, and at times throwing out a great number of blue flowers, which are succeeded by compressed berries of a roundish form. The tree takes many years to arrive at its full growth. The roots run far into the ground perpendicularly, contrary to the usual growth of timber trees in the West Indies, which generally shoot the largest prongs of their roots in an horizontal direction, and are commonly observed to run very near the surface. The bark is thick and smooth; the wood of a dark olive colour, and cross-grained, the strata running obliquely into one another, in form of an X. As timber it answers where strength and duration are required, and its weight no impediment. It takes a fine polish, and answers well in the turner's lathe; but is now chiefly used for ship-blocks^d.

The gum is obtained by jagging the body of the tree in may. It exudes copiously from the wounds, though gradually; and when a quantity is found accumulated, hardened by exposure to the air and sun, it is gathered, and packed in small kegs. This gum has been suspected sometimes to have been sophisticated by the negroes, with the gum of the Manchineal-tree, to which it bears some similitude at the first appearance; but it is easily distinguished, by dissolving a little in spirits: the true gum imparts a whitish tinge; but the manchineal gives a greenish cast: and this is still farther distinguishable by pouring a little of the same tincture into water, which takes from the Guaiacum almost immediately the complexion of milk.

The fruit is purgative, and for medicinal use, far excels the bark. From the flowers also is prepared a laxative syrup, resembling syrup of violets.

The tree rises to the height of forty feet, and measures from fifteen to eighteen inches in diameter. It is certainly one of the most valuable trees in the West Indies; since the body, the bark, gum, fruit, leaves and blossom are all applicable to some useful purpose^e.

The fresh bark opens the body, and is deemed a sweetener of the blood, but the pulp of the berries purges and vomits very violently. The resinous parts of the tree are of a warm active nature, and found, by long experience, to attenuate and dissolve the blood: they are esteemed specifics in old venereal taints, chronic rheumatism, and other disorders arising from the stiness of the juices; and generally administered in decoctions (the resin sometimes in boluses) ordered for a continuance: but great care must be taken to moderate or temper the native acrimony of these medicines in the beginning of a course, and to prepare the body for the use of them; the neglect of which has been frequently the cause of very dismal consequences in hot climates, and may probably have the like effects sometimes in colder regions.

There is a tincture made with the gum of this tree,

^b Swartz.

^c Gartner.

^d Browne.

^e Long's Jamaica, 3. 724.

that has been sometimes administered with success, as well as the powder itself, in obstinate intermittent and remittent fevers; in which cases they commonly procure a few stools, as well as promote a general discharge by the skin. The foliage of the tree is of a very deterfive nature, and frequently used to scour and whiten the floors in most houses about Kingston: the infusion of them is also used to wash painted linens, and other stained garments; which it is said to do very effectually, without changing the lustre of the dyes^f.

The wood and resin only are now used in Europe. Since the use of Mercury it is seldom prescribed in the *lues venerea*; and if it be occasionally employed in *sypilis*, it is rather with a view to correct other *vitia* in the habit. Dr. Cullen looks upon it as analogous to the balsams and turpentine, and as having a considerable power in stimulating the extreme vessels; and thus accounts for its efficacy in chronic rheumatism; and from its passing off by the pores of the skin, he considers it as a probable remedy in some cutaneous disorders.

In the London Dispensatory there is a tincture of Gum Guaiacum—pulvis Aloeticus cum Guaiaco—and the wood is an ingredient in Decoctum Sarfaparillæ compos.

The Edinburgh college have directed an elixir to be prepared with rectified spirit, or with the vinous spirit of sal ammoniac; some object to the spirituous tincture, and Dr. Cullen prefers the diffusion of the gum in water^g.

It is a native of the West Indies. In Jamaica it is abundant on the south side, but it is seldom found in any other part of the island.

It was cultivated in 1699, by the Dutchess of Beaufort^h.]

2. The second sort has many leaflets placed along the midrib by pairs; they are rounded and obtuse at their ends, but narrow at their base, of the same consistence with those of the first sort, but of a darker green colour. The flowers are produced in loose bunches towards the ends of the branches, are of a fine blue colour, and the petals are fringed on their edges. This is called in some of the islands of the West Indies *Bastard Lignum Vite*.

Cultivated by Mr. Miller in 1759.

3. Branches rigid. Leaves alternate, with eight pairs of leaflets. Common petiole edged, jointed; channelled; leaflets ovate-oblong, opposite, quite entire, mucronate, smooth, stiffish, perennial, very slightly shortened at the inner base. Stipules pressed close to the branches, subulate, very smallⁱ.

Native of the Cape of Good Hope, near Mosselbay^k. Mr. Miller, in the 7th edition of his Dictionary (1759) says, it has been long an inhabitant of the curious gardens in England and Holland. See *Schotia*, which name was given to this plant by Jacquin, from Richard van der Schot, his companion in his travels.

4. Native of the island of Tongatabu in the South Seas^l.]

PROPAGATION AND CULTURE.

1, 2. These trees can only be propagated by seeds procured fresh from the countries where they grow naturally. As soon as they arrive sow them in pots filled with light earth; plunge them in a good hot-bed, and if the seeds are good, they will appear in six weeks or two months; and in six weeks more they will be strong enough for transplanting; then they should be carefully taken out of the seed-pots, so as to preserve their roots as entire as possible, and each planted in separate small pots filled with light earth, and plunged into a new hot-bed of tanners bark, where they must be shaded from the sun till they have taken fresh root; then they must be treated in the same manner as other tender exotic plants from warm countries, admitting a large share of free air to them when the weather is warm: they will require to be frequently refreshed with water in warm weather, but it must be given them with caution, for too much wet will infallibly destroy them. While the plants are young, they may be kept during the summer season in a hot-bed of tanners bark under

^f Browne.

^g Woodville.

^h Hort. kew.

ⁱ Linn. syst.

^k Hort. kew.

^l Forster.

a frame; but in the autumn they must be removed into the bark-stove, and plunged into the hot-bed of tan, where they should constantly remain, and must be treated in the same manner as other tender plants, being careful not to give them too much water in the winter, when it is very prejudicial to them, and in summer they should have a large share of free air admitted to them every day. With this treatment the plants will thrive very well, but being plants of slow growth in their own country, cannot be expected to make great progress in Europe.

[In their native country they grow very readily from seed; and seem fond of a dry soil with a hot exposure.]

3. This will live in a good greenhouse all the winter, but in summer it must be placed abroad with other greenhouse plants. It is of a slow growth, and is with difficulty propagated by layers.

GUAJAVA. See *Psidium*.

[GUAJERA. See *Chrysobalanus*.]

GUANABANUS. See *Annona* and *Adansonia*.

[GUAREA. (From its vernacular name of Guara in the West Indies.)

Lin. gen. Reich. n. 515. Schreb. 649. Juss. 265.

Class. 8. 1. Octandria Monogynia.

Nat. order of *Meliæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, four-parted, flattish, short.

COR. Petals four, spreading, lanceolate, obtuse. Nectary tubular, cylindric, quite entire, length of the corolla, contracted at the throat.

STAM. Filaments none. Anthers eight, growing to the inner edge of the nectary, ovate.

PIST. Germ roundish, on a very short pedicel. Style subulate, thick, length of the nectary. Stigma four-cornered, depressed.

PER. Capsule roundish, large, subseffile, four-grooved, four-celled, four-valved.

SEEDS solitary, oblong, with a scarlet aril.

Obs. It should be distinguished from *Trichilia*, to which it is nearly allied.

ESSENTIAL CHARACTER.

Cal. four-cleft. Pet. four. Nect. cylindric, bearing the anthers at its mouth. Caps. four-celled, four-valved. Seeds solitary.

SPECIES.

1. *Guarea trichilioides*. Ash-leaved *Guarea*.

Lin. syst. 360. Reich. 2. 157. Swartz obs. 146.

Trichilia Gaura. Lin. spec. 551.

Melia Gaura. Jacqu. amer. 126. t. 176. f. 37. pi. 53.

Elutheria. Brown. jam. 369. 7.

Lauro affinis. Sloan. jam. 2. t. 170. f. 1.

Guidonia. Plum. gen. 4. ic. 147. f. 2.

Jito. Marcgr. bras. 169. Pis. bras. 79. t. 80.

DESCRIPTION, &c.

This is a tree of a middling size, with a smooth trunk. Leaves pinnate, without an odd leaflet: common petioles alternate, longish, round, smooth, ash-coloured: pairs of leaflets two to four, lanceolate-ovate, obtuse, entire, nerved, smooth: partial petioles short, thick, round. Racemes a foot long, axillary, subdivided, loose, the branches many-flowered, the peduncles very short. Calyx four-cornered, minute; segments blunt, spreading^a.

All parts of the plant, especially the bark, smell strong of musk, and may be used, instead of that perfume, for many purposes. The wood is full of a bitter resinous substance, which renders it unfit for rum-hogsheds; being observed to communicate both its smell and taste to all spirituous liquors: but it is often cut for staves and heading, when there is a scarcity of other lumber. The powder of the bark is said to be a good emetic; and is sometimes used among the negroes for that purpose^b.

Native of South America and the West India islands, in woods and by rivers sides: flowering in January and February. The English call it Musk-wood and Alligator-wood: the French Bois rouge.

It was cultivated in 1777, by Mr. James Gordon^c.

^a Swartz.

^b Browne.

^c Hort. kew.

GUARI-PARIBI. See *Bignonia*.

GUAVA. See *Psidium*.

GUAYACAN. See *Guaiacum*.]

GUAZUMA. See *Theobroma*.

[GUETTARDA. (So named by Linneus in honour of J. Etienne Guettard, member of the Academy of Sciences at Paris, author of Observations sur les Plantes, 1747, &c.)

Lin. gen. n. 1064. Reich. 1161. Schreb. 1437.

Juss. 207. Gartn. t. 36. Halesia. Brown. t. 20.

Class. 21. 7. Monoecia Heptandria. (Hexandria, Sw.)

Nat. order of *Tricocceæ*. *Rubiaceæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, cylindric, very short, quite entire, the outer edge more prominent, deciduous (superior, G.)

COR. one-petalled, funnel-shaped: tube cylindric, long; border six to nine-cleft, with rounded lobes shorter than the tube, (eight-cleft, Jussieu.)

* Male flowers.

STAM. Filaments four to six or seven in the throat of the corolla. Anthers linear, (eight, oblong, subseffile, J.)

PIST. Style filiform.

* Female flowers in the same plant.

PIST. Germ roundish, inferior. Style filiform, longer than the stamens. Stigma subovate, (club-shaped, J.)

PER. Drupe dry, roundish, depressed, torose, (with a sinuous nut, six-celled and containing six seeds, J.)

SEED. Nut lobed, celled, perforated in the periphery for cells: kernels solitary, four to six, roundish, bent at right angles.

Obs. Number of parts and cells various. J. Some flowers have six, others four stamens. Sw.

ESSENTIAL CHARACTER.

Cal. cylindric. Cor. six or seven-cleft, funnel-shaped.

Pist. one. Drupe dry.

SPECIES.

1. *Guettarda speciosa*.

Lin. spec. 1408. Reich. 4. 152. Osb. it. 275.

Gartn. fruct. 179. Brown. jam. 205. t. 20. f. 1.

Leaves subcordate, ovate, obtuse with a point, silky underneath; flowers with six or seven stamens.

2. *Guettarda rugosa*.

Swartz prodr. 59. Vahl symb. 3. 50.

Leaves subcordate ovate acute, tomentose beneath scabrous above; flowers with six stamens.

3. *Guettarda elliptica*.

Swartz prodr. 59.

Leaves elliptic pubescent, flowers with four stamens.

4. *Guettarda membranacea*.

Swartz prodr. 59.

Leaves ovate acuminate membranaceous, subspicidly scabrous; flowers with four stamens.

DESCRIPTIONS, &c.

1. This tree has the habit of *Hernandia*. The leaves are very large, ovate or obovate, rounded at the end with a point, naked, quite entire, with alternate veins; the petioles are much shorter than the leaves, and compressed. The peduncle is opposite to the petiole, but on the upper branches there are two opposite peduncles; they all terminate in a very short dichotomous cyme. The male flowers are sessile, alternate, from the upper side only of the cyme: calyxes somewhat tomentose, scarcely apparently two-lobed. Tube of the corolla tomentose: lobes of the border oval-oblong, one-third only of the length of the tube. No germ; style shorter by half than the tube: stigma cylindric-headed, obtuse. The female flowers are like the males; but have a germ succeeded by a drupe, containing six large, woody seeds, connected together^d.

According to Gærtner, the flowers are either hermaphrodite or monoecious: the stamens from six to nine: the pericarp a dry, inferior, berried drupe, inclosing a bony shell, deeply umbilicated on both sides, and divided into four or six lobes variously wrinkled, resembling that of a walnut; perforated in the circumference for the cells^e.

Browne observes that it seldom rises above eight or ten feet in height, or exceeds three or four inches in diameter; that the bark is smooth; and the disposition

^d Linn. spec.

^e Gærtner.

of the flowers very remarkable, as well as the texture and form of the leaves. Guettarda of Osbeck, it. 275. is scarcely the same species. *G. speciosa* of Aublet. guian. 317. is different from this.

Dr. Browne named it after the Rev. Dr. Hales, author of the Vegetable Statics.

It is native of Jamaica, Java, and the Society islands in the South Seas.

2. Branches round, opposite, scarred, smooth below, villose above. Leaves petioled, from two to three inches long, crowded towards the ends of the branchlets, opposite, ovate-oblong, sometimes narrower towards the base, terminated by a small point, quite entire, very rugged on the upper surface with minute elevated mucronated dots, underneath netted-veined and wrinkled, with very minute villose hairs scattered about. Stipules awl-shaped, deciduous. Peduncles axillary, opposite, compressed, villose, purple, dilated towards the top, twice or thrice dichotomous. Flowers sometimes in a head ~~in a head~~. A sessile flower in each division. Bracte awl-shaped, deciduous, at the divisions and below each flower. Calyx pitcher-shaped, obscurely toothed. Tube of the corolla an inch and half long, soft and somewhat silky. Fruit the size of a pea, ash-coloured with villose hairs. Found by West, in the island of Santa Cruz^f.

Native of the East Indies^g.

3. Native of Jamaica.

4. Native of St. Domingo^h.

According to Jussieu, we are to refer to this genus *Cadamba jasminiflora*, of Sonnerat, ind. 2. 228. t. 128. which is the same with *Rava-pou* of Rheede malab. 4. t. 47, 48. and *Nyctanthes hirsuta* of Linneus, which is certainly a *Guettarda* according to Gærtner, 180.—He doubts whether *G. coccinea* Aublet. Guian. t. 123. be of this genus, or of *Hamelia*, or between both. See [fertia.]

GUIDONIA. See *Guarea*, *Latia*, *Samyda*.

GUILANDINA. (So named in honour of Melchior Guilandinus or Wieland, of Prussia; a great traveller; he succeeded Anguillara at Padua in 1561, and Fallopius in 1564. He died in 1589. His publications are, *De Stirpibus* 1558—*de Papyro* 1572.)

Lin. gen. n. 517. Reich. 560. Schreb. 704. Gærtner. t. 148. Juss. 350. Bonduc. Plum. 39. Gymnocladus & Moringa. Juss. 346, 348. Gærtner. t. 147. Schreb. n. 1537 & 1606.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Lomentaceæ*. *Leguminosæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, (urceolate or pitcher-shaped, G.) Tube short, turbinate, permanent, with an oblique mouth. Border five-parted, nearly equal, spreading, deciduous: divisions oblong, broader on the outside and rounded; the two upper ones a little shorter, the lowest a little longer.

COR. Petals five, inserted into the neck of the calyx; the uppermost roundish, concave, ascending, a little shorter; the rest oblong, broader in front, rounded at the tip, reflex-spreading, longer than the calyx, and the two lowest a little longer than the middle ones.

STAM. Filaments subulate, thicker at the base and villose, decumbent, inserted into the neck of the calyx, shorter than the corolla, unequal; the lower ones gradually longer. Anthers oblong, affixed to the back.

PIST. Germ oblong. Style filiform, length of the stamens. Stigma simple.

PER. Legume rhomboidal, the upper future convex, from swelling compressed, one-celled, with transverse partitions.

SEEDS bony globular-compressed, solitary between the partitions.

OBS. I have only seen the male flowers of *G. Bonduc* and *Bonducella*; it remains therefore to be inquired whether they are dioicous or polygamous.

ESSENTIAL CHARACTER.

Cal. one-leaved, falver-shaped. Petals inserted into the neck of the calyx, nearly equal. Seed-vessel a legume.

SPECIES.

1. *Guilandina Bonduc*. Yellow Bonduc; or Nicker-tree. Lin. spec. 545. Reich. 2. 260. hort. cliff. 158. upf. 102. fl. zeyl. n. 157. (Cæfalpina). Plum. gen. 25. (Bonduc majus). Pluk. alm. t. 2. f. 2. (Acacia). Sloan. jam. 2. 40. (Lobus). Rumph. amb. 5. 89. t. 48.

Prickly; pinnas ovate, with solitary prickles on the leaflets.

2. *Guilandina Bonducella*. Gray Bonduc.

Lin. spec. 545. Reich. 2. 260. fl. zeyl. n. 156. hort. upf. 101. Brown. jam. 228. 1. Gærtner. fruct. 2. 315. Lour. cochinch. 265. Plum. gen. 2. (Bonduc minus). Breyn. prod. 3. app. 33. t. 28. (Crista pavonis). Sloan. jam. 2. 41. (Lobus). Rumph. amb. 5. 92. t. 49. f. 1. Rheed. mal. 2. 35. t. 22. Forsk. descr. 135. n. 20.

Arbor exotica spinosa fol. Lentisci. Baub. pin.

Raii hist. 1743.

Arbor spin. indica muricatis filiquis. Park. theat. 1551. f. 3.

Lobus echinatus. Ger. emac. 1553. 22.

Prickly; pinnas oblong-ovate, with double prickles on the leaflets.

3. *Guilandina Nuga*.

Lin. spec. 546. Reich. 2. 261. Rumph. amb. 5. 94. t. 50. (Nugæ). Rheed. mal. 6. 33. t. 19. (Kaka Mullu).

Stem unarmed; the primary petiole of the leaves with double prickles underneath.]

4. *Guilandina Moringa*. Smooth Bonduc.

Lin. spec. 546. syst. 396. Reich. 2. 261. mant. 379. fl. zeyl. n. 155. mat. med. 112. Plenck, ic. t. 328. Swartz obs. 167.

Moringa pterygosperma. Gærtner. fruct. 2. 314.

Moringa zeylanica, &c. Burm. zeyl. 162. t. 75.

Morungu. Rheed. mal. 6. 19. t. 11. Rumph. amb. 1. 184. t. 74, 75. Raii hist. 1745.

Hyperanthera Moringa. Vahl symb. 1. 30.

Balanus Myrepfica. Blackw. t. 286.

Anoma Moringa. Lour. cochinch. 879.

Lignum peregrinum aquam cæruleam reddens. Baub. pin. 416.

Unarmed; leaves subbipinnate, lower leaflets ternate.

5. *Guilandina dioica*. Hardy Bonduc.

Lin. spec. 546. Reich. 2. 261.

Hyperanthera dioica. Vahl symb. 1. 31.

Gymnocladus canadensis. Lamarck encycl. 1.

Bonduc canadense, &c. Dubam. arb. 1. 108. t. 103.

Unarmed; leaves bipinnate, at the base and tip simply pinnate.

6. *Guilandina gemina*.

Lour. cochinch. 265.

Prickly, leaves pinnate, calyx five-leaved, fruit in pairs.]

DESCRIPTIONS, &c.

1. Leaves near a foot and half long, composed of six or seven pairs of pinnæ, each of which has as many pairs of leaflets, which are ovate and entire; the principal midrib of the leaf is armed with short, crooked, single thorns, placed irregularly; the stalks are also armed with thorns, which are larger. The stalks at first grow erect, but afterwards twine about the neighbouring trees and shrubs. The flowers are in long axillary spikes. Petals equal, concave yellow. Legume broad, thick, three inches long and two broad, closely armed with slender spines, opening with two valves, each inclosing two hard seeds about the size of children's marbles, of a yellowish colour.

[Native of both Indies. Introduced 1690, by Mr. Bentick^a.]

2. The second sort differs from the first in having much smaller leaves, set closer together; and below each pair of leaflets are two short stiff crooked spines, which are opposite: the flowers are of a deeper yellow, and the seeds are ash-coloured.

[Sloane affirms that there is no difference between this and the precedent but the colour of the nut, which in the foregoing is yellowish, finely variegated with annular or interrupted saffron-coloured zones. The in-

^f Vahl.

^g Swartz.

^h Ibid.

^a Hort. kew.

tegument is also stony, but the middle lamina is of a full rose or flesh colour^b.

This weakly plant spreads a great way about the root, or rises among the neighbouring bushes, if it finds a due support. The stalk and branches are very full of thorns that arch backwards. The seeds are gray, and commonly used instead of marbles, by boys, in the sugar colonies^c.

Corolla almost regular, with no claws to the petals. Legume ovate-rhomboidal, swelling in the middle but flattened at the sides, with spines all over it, stiff, but not pungent, ferruginous bay-colour on the outside, pale within; the two valves very smooth on the inside, without any vestige of a partition. Seeds two or three, ovate-globular, very smooth and shining, seeming as if they had very fine, parallel, annular clefts, but quite entire; of a livid lead colour, with a brown mark at the navel.

There is a greater affinity between *Cæsalpinia* and *Guilandina* than between this and *Moringa*^d.

In Egypt, the nuts of both these sorts are used by the women, strung in necklaces, and hung about their children, by way of amulet, to guard them from forcery^e.

They are often cast ashore on the north-west coasts of Ireland and Scotland, and are called by the inhabitants of the latter *Molucca Beans*^f.

This tree makes a good fence.—It is native of both Indies, China, and New Zealand; and was cultivated by Mr. George Willmer at Stratford Bow, before 1640. He raised it from seed brought from the West Indies to the height of three or four feet, but it perished the next winter, for want of such due keeping, as was fit for such tender plants^g.

Johnson in Gerarde calls the seeds, *Beazor Nuts*, and says that they were offered to sale for East-Indian Bezoar.

3. Branches thorny. Leaves thick, solid, smooth, opposite. Flowers yellow^h. Legumes smooth.

Native of Amboinaⁱ, and Malabar, in swamps by the sides of rivers.

4. This tree has a thick root of a softer substance than usual. Trunk of a middling size, from twelve to twenty feet in height, smooth, with an ash-coloured bark. Branches rather erect. Leaves bipinnate: common petioles two or three feet long, round, smooth, stiff; the partial ones in five or six pairs, horizontal, compressed: leaflets in three pairs, ternate, oblong, entire, smooth, veined. Flowers in racemes, which are long, axillary, round, pubescent, subdivided, many-flowered; the subdivisions branched, directed one way, bent down; under these are minute, deciduous scales. Calyx five-leaved; three upper, two lower; all equal, bent back, lanceolate, obtuse, coloured, whitish or pale red, pubescent. Corolla: four of the petals anterior, equal, bent down, pale; one posterior, erect, a little larger, whitish: the base nectareous. Filaments: five longer, being the length of the larger petal, and upright: anthers cordate, incumbent, fertile, yellow: the five shorter ones barren. Germ lengthened out, three-cornered, acuminate, pubescent: style subulate, short: stigma acute. Legume two feet long, streaked, three-valved, one-celled. Seeds fifteen or sixteen, distinct, placed longitudinally, oblong, three-cornered, with three membranaceous wings^k.

Gartner calls the seed-vessel a Capsule: and describes it as fungous-coriaceous, subulate, furrowed, three-cornered; the valves thick, angular inwards, and hollowed in the internal angle with large round excavations for the reception of the seeds: which are sometimes eighteen in number, in one row, of a dirty brown colour; they are fixed, not to the side, but to the middle of the valves.

This species therefore seems different from the *Guilandina*, in the calyx, stamens, fruit and habit^l.] See *MORINGA*.

The root when young is scraped, and used by the inhabitants as Horse-radish is in Europe, having much the same sharp taste; as have also the seeds.

^b Gartner. ^c Browne. ^d Gartner. ^e Sloane and Long.
^f Sloane. ^g Park. theat. ^h Hort. malab. ⁱ Linn. spec.
^k Swartz. ^l Swartz and Linn. syst.

[Native of the East Indies; cultivated in Jamaica and Egypt.—Mr. Miller cultivated it here in 1759^m.

Moringa aptera, which is *Balanus myrepica* and *Been album offic.* has seeds double the size of this, turbinate, snow white, without any vestige of wingsⁿ.]

5. Stem erect, thirty feet high or more, dividing into many branches, covered with a very smooth blueish ash-coloured bark. Leaflets oval, very smooth and entire, alternate. There are male and female flowers on different plants.—Native of Canada, whence it was first brought to Paris.

[Cultivated in 1748, by Archibald Duke of Argyle^o.

6. Stem shrubby, large, suberect, with many climbing branches, on which are many recurved, scattered prickles. Leaves simply pinnate, without an odd leaflet: leaflets ovate, obtuse, quite entire, smooth, with a solitary prickle at the base. Flowers yellow, in compound, loose, terminating racemes. Calycine leaflets obtuse, woolly, bell-shaped-spreading. Petals scarcely longer than the calyx. Nectary four ovate glands. Filaments hairy, equal: anthers sagittate. Germs two longish: styles two thick, longer than the stamens: stigmas blunt. Legumes two, subovate, compressed, echinate. Seeds two or three, roundish, shining, ash-coloured, very hard, containing a roundish, oily kernel like an almond.

Native of Cochinchina, and more like the *Bonduc* than *Bonducella*^p.]

PROPAGATION AND CULTURE.

The four first sorts being natives of warm countries, will not live through the winter in England, unless they are placed in a warm stove, and the pots plunged into the tan-bed. They are propagated by seeds, but those of the two first sorts are so hard, that unless they are soaked two or three days in water before they are put into the ground, or placed under the pots in the tan-bed to soften their covers, they will remain years in the ground without vegetating: when the plants come up, they will be fit to transplant in a short time; then they should be each transplanted into a small pot, filled with light fresh earth, and plunged into a moderate hot-bed of tanners bark, shading them till they have taken fresh root; then they must be treated in the same manner as other tender exotic plants, giving them a large share of air in warm weather, and but little water; and when the plants have advanced to be too tall to remain in the frames, they must be removed into the bark-stove and plunged into the hot-bed, where they will make great progress, provided they have not too much water, especially during the winter season, for these plants are very impatient of moisture in cold weather.

The fourth sort requires the same treatment as those before-mentioned, but the seeds will grow without being steeped in water; and the plants are with difficulty shifted from one pot to another, for their roots are large, fleshy, and have but few fibres; so that unless great care is taken, all the earth will fall away from them, which often causes their stalks to decay almost to the root, and sometimes occasions the loss of the plants. This plant must be sparingly watered at all times, but particularly in cold weather, when moisture will cause it to rot in a short time.

5. This sort will live abroad, and is never hurt by frost. It is propagated by cutting off some of the horizontal roots, or by suckers. It requires a light soil, not too moist.

[*GUILANDINOIDES*. See *Guaiacum* and *Schotia*.

GUINEA HEN WEED. See *Petiveria*.

—— Pepper. See *Capsicum*.

—— Wheat. See *Zea*.

GUM elastic. See *Iatropa*.

—— Elimi-tree. See *Amyris* and *Bursera*.

—— Lac. See *Croton*.

—— *SUCCORY*. See *Chondrilla*.]

GUNDELIA. (So named by Tournefort, in honour of Dr. Andrew Gundelscheimer, who found it in his travels, in company with Tournefort, in the Levant.)

Lin. gen. 1000. Reich. 1085. Schreb. 1356.

Tournef. 486. Juss. 175. Hacub. Vaill. act.

gall. 1718. f. 16.

^m Hort. kew.

ⁿ Gartner.

^o Hort. kew.

^p Louriero.

Class. 19. 5. Syngenesia Polygamia Segregata.
Nat. order of *Compositæ Capitatae*.—*Cinarocephalæ*, Juss.

GENERIC CHARACTER.

CAL. common scarcely any, except the leaves furrounding the compound receptacle.

COR. Compound tubular, uniform: *Corollules* hermaphrodite five, equal.

Proper one-petalled, club-shaped: border bellying, five-cleft, upright.

STAM. Filaments five, capillary, very short. Anther cylindrical, tubular, long.

PIST. Germ ovate, immersed in the receptacle, crowned with very small scales, inferior. Style filiform, longer than the corolla. Stigmas two revolute.

PER. none; but the seeds are totally immersed and hid in the receptacle.

SEEDS solitary, roundish, acuminate, crowned with an obscure rim; the side ones are abortive.

REC. Common conic, covered on every side with partial receptacles, divided by three-cusped chaffs.

Partial obtusely conic, quadrangular, truncate, with five little pits, one of which is in the centre, the others in the circumference, for the insertion of the five floscules.

OBS. One central flower hermaphrodite, four marginal male.

ESSENTIAL CHARACTER.

Cal. scarcely any, five-flowered. Cor. tubular, male and hermaphrodite. Recept. chaffy. Down none.

SPECIES.

1. Gundelia Tournefortii.

Lin. spec. 1315. Reich. 3. 947. Gron. orient. 251.

G. glabra. Mill. dict. n. 2. fig. t. 287.

G. orientalis, &c. capite glabro. Tournef. cor. 51. itin. 2. 108. fig.

Eryngium syriacum, &c. Mor. hist. 3. 167.

Silybum Dioscoridis, &c. Rauw. itin. 74. fig.

β. G. orient, &c. flor. intense purpureis, cap. araneosa lanugine obfuso. Tournef. cor. 51.

G. Tournefortii. Mill. dict. n. 1.

DESCRIPTION, &c.

[This is a milky plant. Leaves alternate, prickly: floral leaves decurrent. Flowers terminating. Habit that of a thistle.]

Root perennial, running deep into the ground. Stalks seldom more than a foot and half high. The under leaves are long, narrow, and serrate, the teeth ending in a spine; the other leaves are broader, irregularly slashed to the midrib, and armed at the points with sharp prickles. The stalks divide at top into several branches, which are armed with leaves of the same form, but narrower: each is terminated by a conical head of flowers, resembling those of *Dipsacus*, furrounded at the base by a circle of long narrow prickly leaves. Few of the seeds ripen perfectly; and if rain happens when the plants are in flower, the germ perishes, which is the case with several other plants whose flowers are collected into heads.

Native of the Levant.

It flowers in June, and the seeds ripen in August. The seeds were given to Mr. Miller by Dr. Alexander Ruffel, of Lime-street, who procured them from Aleppo. [Cultivated by Mr. Miller in the year 1739.]

PROPAGATION AND CULTURE.

This plant is propagated by seed, which should be sown the beginning of March, in a warm dry border of fresh, but lean earth, in the place where the plants are designed to remain. When the plants come up, they must be carefully cleared from weeds; as they grow large, they should be thinned, leaving the plants which are designed to remain, about two feet asunder, that they may have room to spread. After this there is no other culture required, but to keep them clear from weeds; and if the frost should prove severe in winter, the plants should be covered with straw or peas-haulm to protect them; but this covering must be taken off in mild weather; in two years they will produce their flowers, when they will make a fine appearance amongst other hardy plants in the pleasure-garden. They flower in May, and the plants lose their stalks and leaves in autumn, but their roots will abide many years.

[GUNNERA. (So named by Linneus in honour of Joan. Ernest. Gunnerus, Bishop of Drontheim in Norway, founder of the Society at Drontheim, 1761, author of *Flora Norvegica*, 1766.)

Lin. gen. Reich. n. 1102. Schreb. n. 1378. Juss. 405, 452.

Class. 20. 1. Gynandria Diandria.

Nat. order of *Urticæ*. Juss.

GENERIC CHARACTER.

CAL. Ament verticillated: scales one-leaved, one-flowered, fetaceous, the length of the flower, permanent. Perianth none, except the crust of the seed, which has two teeth.

COR. none.

STAM. Filaments two, very short, opposite, sitting on the sides of the germ on the outside of the teeth. Anthers oblong.

PIST. Germ ovate, with two teeth at the tip. Styles two, short, subulate, between the teeth of the germ. Stigmas simple.

PER. none.

SEED single, ovate, the bark formed from the crust of the perianth.

ESSENTIAL CHARACTER.

Ament with one-flowered scales. Cal. and Cor. none.

Germ two-toothed. Styles two. Seed one.

SPECIES.

1. Gunnera perpenfa. Marsh-Marygold-leaved Gunnera.

Lin. syst. 819. Reich. 4. 42. mant. 121. amoen. 7. 495.

Perpensum blitisperrum. Burm. prodr. 26.

Petasites africanus, calthæ palustris foliis. Herm. lugdb. 488.

Blitum afric. &c. Pluk. alm. t. 18. f. 12.

DESCRIPTION, &c.

Leaves radical, cordate, obtuse, smooth, veined, repand, tooth-crenate; with the petioles scarcely pubescent. Scape two feet high. Ament terminating, long, compound; the subdivisions scattered, simple, distinct: bractes lanceolate, short. Floscules naked.—Native of the Cape of Good Hope.

Introduced in 1767, by Mr. William Malcolm.

GUSTAVIA. (So named by the younger Linneus in memory of Gustavus III. king of Sweden, who presented a great collection of Indian plants to the elder Linneus.)

Lin. gen. Reich. n. 917. suppl. 51. Diff. Surin. 18. Gært. t. 138. Pirigara. Aubl. guian. t. 192, 193. Juss. 326.

Class. 16. 7. Monadelphia Polyandria.

Nat. order of *Myrti*. Juss.

GENERIC CHARACTER.

CAL. none; but the Receptacle above furrounded with a rim, flat, broad, bald.

COR. Petals six or eight, slightly connected at the base, ovate, sessile, large.

STAM. Filaments very numerous, shorter than the petals, uniting at the base into an upright bell distant from the style. Anthers small, oblong, upright, shorter by half than the petals.

PIST. Germ turbinate, inferior, flat, bald between the petals and the style. Style conical, very short, permanent. Stigma blunt. (lobed. G.)

PER. Berry subglobose, subconical, truncate, six-celled, crowned with the rim of the receptacle. (four to seven-celled. G.)

SEEDS. Beans several, oval, smooth, mutilated on one side at the base; with a cartilaginous twisted appendix.

ESSENTIAL CHARACTER.

Cal. none. Pet. several. Berry many-celled. Seeds appendicled.

SPECIES.

1. Gustavia augusta.

Lin. syst. 620. Reich. 3. 370. diff. pl. surin. p. 18. c. tab. Suppl. 313.

G. meizocarpa. Gært. fruct. 2. 264.

Pirigara tetrapetala. Aubl. guian. 487. t. 192.

Japarandiba. Pif. bras. 121. Marcgr. bras. 109. fig. Raii hist. 1646.

DESCRIPTION, &c.

A tree, with thickish branches, and from twenty to thirty feet high. Leaves alternate, subsessile, some-

what crowded, in the upper part broad-lanceolate, narrower at the base, from a span to a foot in length, ribbed, subferrate, smooth on both sides. Peduncles from one to three, terminating, bearing one flower, and having one joint. Flower very specious, larger than the white Water-Lily, with a large, naked, bald disk or receptacle between the corolla and the style: petals white, with red tips, the consistence of the White Lily. Filaments united at bottom into a membrane, and being inserted into the base of the corolla, are of the nature of those in the class Icosandria: style minute, yellow^c.

The seed-vessel is a juiceless berry, of a turbinate-globular-form, with muscular-like swellings, truncate at top, and slightly concave, produced at bottom into a conical furrowed peduncle: the skin is coriaceous, whitish ash-coloured, veined, yellow within, and very smooth: the cells are from four to seven; and the partitions are thin, like paper, and flexuose. The seeds are from three to five in each cell, ovate, variously angular from the pressure of those next them, of a yellowish cinnamon colour, fixed to the internal angle of the cells from the top to the middle by permanent, twisted umbilical chords, so that the upper ones are pendulous, but the lower obliquely or horizontally decumbent^d. The flowers smell like the Lily; but the wood is extremely fetid, even after it is dry: the inhabitants use it for hoops^e. It is a native of Surinam and the island of Cayenne.

Pirigara Lexapetala, *Aublet guian.* 490. t. 193. is a distinct species from this^f.]

GUTTA. See *Cambogia*.

[GYMNANDRA. See *Bartsia*.

GYMNANTHES. (Γυμνάνθης, having naked flowers.)

Lin. gen. Schreb. n. 1465. Swartz prodr. 95.

Class. 21. 8. Monoecia Monadelphia.

GENERIC CHARACTER.

* Male flowers.

CAL. Ament compound, with pedicels tripartite or trichotomous, anther-bearing.

COR. none.

STAM. Filaments naked, or pedicels tripartite or trichotomous, scattered, placed on every side of the ament, very short, deciduous. Anthers oblong, minute, three-celled.

* Female flowers on the same or a different shrub, solitary or amentaceous.

CAL. Perianth none, but one or two scales at the base of the germ.

COR. none.

PIST. Germ roundish, superior. Style scarcely any, or very short, three-cornered. Stigmas three, linear, acute, channelled, reflex.

PER. Capsule tricoccous, three-celled, three-valved.

SEEDS solitary, roundish.

ESSENTIAL CHARACTER.

MALE. Ament naked. Perianth and Corolla none. Stam. pedicels three-parted or three-forked, anther-bearing.

FEM. Ament or germ pedicelled. Cor. none. Style trifid. Caps. tricoccous, three-celled.

SPECIES.

1. *Gymnanthes elliptica.*

Swartz prodr. 96.

Dioicous: Stamens three-parted, females amentaceous.

2. *Gymnanthes lucida.*

Swartz prodr. 96.

Monoicous: Stamens trichotomous; females solitary, pedicelled.

These shrubs were found by Swartz in the West-Indies; the first in Jamaica, the second in Hispaniola.

GYNOPOGON. (From Γυνή a woman, and πογων a beard. The stigma of the flower being bearded.)

Lin. gen. Schreb. n. 414. Forst. gen. 18. Juss. 148.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Apocineæ*. Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, very small, half-five-cleft, permanent: segments linear, acute, erect.

^c Linn. suppl.

^d Gartner.

^e Linn. suppl.

^f Swartz & Retzius.

COR. monopetalous, contorted: tube cylindrical, ventricose below the tip, contracted at the throat: border flat, five-parted; segments ovate.

STAM. Filaments five, very short, inserted into the tube above the middle. Anthers erect, linear, within the tube.

PIST. Germ ovate. Style filiform; shorter by half than the tube: Stigma globular, two-lobed, villose at the tip.

PER. Berry pedicelled; subglobular, coriaceous, filled with the seed.

SEED single, cartilaginous, subbilocular; with one or two kernels.

OBS. The fruit is generally abortive, the seed not having kernels: the germs when cut through have two cells, and two seeds in each cell.

ESSENTIAL CHARACTER.

Cal. half-five-cleft, inferior, permanent. Cor. five-parted, tube ventricose below the tip, throat contracted. Stigma globular, two-lobed. Berry pedicelled; subglobular. Seed cartilaginous, subbilocular.

SPECIES.

1. *Gynopogon stellatum.*

Forst. gen. 18. n. 1. fl. austr. n. 117.

Leaves in whorls, three together, lanceolate.

2. *Gynopogon Alyxia.*

Forst. fl. austr. n. 118.

Leaves in whorls, five together, obovate.

3. *Gynopogon scandens.*

Forst. fl. austr. n. 119.

Leaves opposite, ovate, ribbed.

Natives of the islands in the South seas. The first of the Society and Friendly islands; the second of Norfolk island; and the third of the Society islands^g. At Otaheite in may 1774.]

GYPSOPHILA. (From γυψος & φίλη, amica gypsi, fond of a gypseous or calcareous soil.)

Lin. gen. n. 563. Reich. 612. Schreb. 768. Juss. 301.

Class. 10. 2. Decandria Digynia.

Nat. order of *Caryophyllæi*.

GENERIC CHARACTER.

CAL. Perianth bell-shaped, angular, five-parted; leaflets ovate, permanent.

COR. Petals five, ovate, obtuse, spreading, subseffile.

STAM. Filaments subulate, spreading. Anthers roundish.

PIST. Germ almost globular. Styles filiform, gaping. Stigmas simple.

PER. Capsule globular, one-celled, five-valved.

SEEDS very many, roundish.

OBS. *G. paniculata* is dioecous.

ESSENTIAL CHARACTER.

Cal. one-leafed, bell-shaped, angular. Petals five, ovate, seffile. Caps. globular, one-celled.

SPECIES.

[1. *Gypsophila repens. Creeping Gypsophila.*

Lin. spec. 581. Juss. 415. Reich. 2. 324. amoen.

3. 23. *Ger. prov. 409. t. 15. f. 2. Jacqu.*

austr. 5. t. 407. Villars dauph. 3. 602.

Saponaria. Lin. hort. cliff. 166. 5. Hall. belv. n. 905.

Alfine orientalis, &c. Buxb. cent. 3. 32. t. 60.

Caryophyllus alpinus, &c. Bocc. mus. 23. t. 5. f. 1.

Raii suppl. 483.

C. saxatilis, fol. gramineis, minor. Bauh. pin. 211.

Leaves lanceolate, Stamens shorter than the emarginate corolla.]

2. *Gypsophila prostrata. Trailing Gypsophila.*

Lin. spec. 581. Reich. 2. 325. Pluk. alm. t. 75. f. 2.

Leaves lanceolate, smooth and even, stalks diffused, pistils longer than the bell-shaped corolla.

3. *Gypsophila paniculata. Panicked Gypsophila.*

Lin. spec. 583. Reich. 2. 325. amoen. 3. 23. Jacqu. austr. 5. 26. t. app. 1.

Leaves linear-lanceolate, the lower ones scabrous; Stamens minute; styles longer than the corolla.

^g Forster.

- [4. *Gypsophila viscosa*. *Clammy Gypsophila*.
Lin. syst. 415. *Murr. in comm. gott.* 1783. p. 9.
t. 3. *Ait. hort. kew.* 2. 85.
Leaves ovate-lanceolate, smooth and even, at the base cordate and clasping, the internodes of the branches clammy in the middle, petals retuse.
5. *Gypsophila adscendens*.
Lin. syst. 415. *Jacqu. hort.* 2. *t.* 138.
Leaves lanceolate-linear, stalks prostrate, corolla, stamens and pistils all of the same length.
6. *Gypsophila altissima*. *Upright Gypsophila*.
Lin. spec. 582. *Reich.* 2. 325. *amoen.* 3. 23. *Gmel. fib.* 4. 443. *t.* 60. (*Lychnis*). *hort. upf.* 107. (*Saponaria*). *Bocc. mus. t.* 5. *f.* 3. *Baub. pin.* 211. (*Caryophyllus*).
Leaves lanceolate, three-nerved, stalks straight.
7. *Gypsophila Struthium*. *Skrubby Gypsophila*.
Lin. spec. 582. *syst.* 416. *Reich.* 326. *Loefl. it.* 73. *hort. cliff.* 166. 4. *D'Affo aragon. n.* 361. *Baub. pin.* 206. *Raii hist.* 1000. 3. (*Saponaria*). *Barr. rar.* 64. *t.* 119. *Bocc. mus. t.* 2. *f.* 122. (*Kali vermic.*)
Leaves linear, fleshy, axillary, crowded, columnar.]
8. *Gypsophila fastigiata*. *Triangular-leaved Gypsophila*.
Lin. spec. 582. *Reich.* 2. 326. *amoen.* 3. 23. *f. succ. n.* 379. *Krock. files. n.* 647.
Lychnis Gypsophila. Gmel. fib. 4. 144. *t.* 61. *f.* 1.
Saponaria. Hall. jen. 117. *t.* 2. *f.* 1.
Caryophyllus saxatilis, &c. Baub. pin. 211.
Polygonum majus, &c. Mentz. pug. t. 2. *f.* 2.
Leaves lanceolate-linear, obscurely three-cornered, smooth and even, obtuse, directed one way.
9. *Gypsophila perfoliata*. *Perfoliate Gypsophila*.
Lin. spec. 583. *syst.* 416. *Reich.* 2. 327. *hort. cliff.* 166. 3. (*Saponaria*).
Spergula multiflora, &c. Dill. elth. 368. *t.* 276. *f.* 357.
[β. *G. tomentosa. Lin. spec.* 583. *amoen.* 4. 271. *Barrel. ic. t.* 1002. *Woolly Gypsophila*.
Leaves ovate-lanceolate, half-stem-clasping.
10. *Gypsophila muralis*. *Wall Gypsophila*.
Lin. spec. 583. *Reich.* 2. 327. *amoen.* 3. 24. *f. succ. n.* 380. *Gmel. fib.* 1. 125. *Pollich pal. n.* 406. *Krock. files. n.* 648. *Ger. prov.* 408. 1. *Villars dauph.* 3. 602.
Saponaria. Lin. lapp. n. 171. *Hall. belv. n.* 903.
Lychnis parva palustris, &c. Mentz. pug. t. 7. *f.* 4. *Raii hist.* 1004. 10.
Leaves linear, flat, calyxes leafless, stalk dichotomous, petals crenate.
11. *Gypsophila rigida*.
Lin. spec. 583. *Reich.* 2. 328. *amoen.* 3. 24. *Gmel. fib.* 4. 142. *n.* 39.
Saponaria. Lin. hort. cliff. 166. 6. *Sauv. monsp.* 145.
Tunica minima. Dalech. hist. 1191.
Caryophyllus minimus muralis. Baub. pin. 211.
Leaves linear, flat, stalk dichotomous, peduncles two-flowered, petals emarginate.
12. *Gypsophila faxifraga*. *Small Gypsophila*.
Lin. spec. 584. *syst.* 416. *Reich.* 2. 328. *Willich obs. n.* 64. *Barr. rar.* 64. *t.* 998. (*Lychnis*). *Villars dauph.* 3. 603.
Dianthus faxifragus. Lin. spec. ed. 1. 413.
Tunica faxifraga. Scop. carn. n. 506. *Hall. belv. n.* 902.
Betonica coronaria f. Tunica minima. Baub. hist. 3. 337.
Caryophyllus faxifr. strigosior, f. sylvestris fl. minimo. Baub. pin. 211.
Leaves linear, calyxes angular, with four scales, corollas emarginate.

DESCRIPTIONS, &c.

1. The whole plant is smooth. Root perennial, woody, very long, as thick as the little finger. Stems many, in a close tuft, spread every way, half a foot in length, perennial; branches herbaceous, erect, from three to six inches high, simple; reddish at the joints, forming an imperfectly trichotomous panicle at top. Leaves lanceolate-linear, acute, glaucous, thick, sessile, opposite, seldom so long as an inch. Flowers remote, few, on bifid or trifid peduncles. Calycine leaflets

lanceolate, acuminate, concave, with a dark green or purple line along the middle, and white membranaceous edges. Corolla white or red, spreading very much: petals flat, a little attenuated towards the base, more or less emarginate, twice as long as the calyx. Filaments longer than the calyx, and not much shorter than the corolla. Anthers twin, at first whitish, but turning of a pale red. Styles scarcely longer than the petals. Capsules blunt^a.

Native of Siberia, Austria, Switzerland and Provence: flowering in september.—Introduced in 1774, by Monf. Richard^b.

2. Root perennial. Stems several, smooth, round, about a foot in length, reddish at the joints. Panicle brachiate, trichotomous, the middle peduncle more simple than the others. Corolla white (Miller and Plukenet say purplish); petals obtuse, spreading, channelled at the tip: stamens only half the length of the corolla; styles a little longer than it. It much resembles the foregoing; but differs in the root hardly creeping—the joints of the stalk being less purple—the leaflets of the calyx not keeled—the corollas smaller, and white, not reddish—the anthers yellow—the styles diverging, longer than the petal—and the leaves less fleshy^c.

It flowers from june to september: and was cultivated in 1759, by Mr. Miller^d.

Its native country is not certainly known; but it is supposed to come from some of the mountainous parts of Europe.

3. Leaves scabrous at the edge. Stamens at the bottom of the flower. Petals rolled back, smaller than in the other species. Styles bent in^e.

Root perennial, thick, fleshy. Stems several, round, jointed, prostrate, a foot and half long, the thickness of a quill, below villose and rugged; four-cornered and simple, above smooth. From the middle upwards spring ascending branches, subdivided alternately, a foot long, shining, smooth, leafy, pale, ending as does the stem itself in a flowering panicle. Leaves narrow-lanceolate, acute, opposite, sessile, quite entire, thick, somewhat glaucous, the lowest three inches long, the upper ones gradually smaller. Peduncles branched. Flowers very numerous, and without scent. Calyx smooth, obtusely five-grooved, leaflets blunt, green, with white edges. Petals white, oblong, blunt, quite entire, twice as long, as the calyx. Native of Hungary, flowering in july and august^f. Also of Siberia and Tartary, according to Mr. Miller, who cultivated it in 1759^g, and to whom the seeds were sent from Petersburg.

4. Root annual, slender. Plant from a long span to a foot in height, very smooth, glaucous. Stem erect, slender, branched almost from the bottom. Branches opposite, inserted crosswise, gibbous at the base, elongated, ascending. Leaves somewhat fleshy, acute, an inch and half long, spreading very much. Panicle terminating, diffused and almost fastigiate, dichotomous; peduncles alternate, slender, gibbous at the base; pedicels rigid, long, divaricate, the outmost three-flowered, the axillary one-flowered. Stipules of the peduncles and pedicels lanceolate, membranaceous, small, pressed close. Flowers the size of those in the first and second species. Calyx subglobular, not angular; the parts concave, blunt, joined by a membrane at the base. Corolla scarcely red, twice as long as the calyx, without scent, petals oblong, emarginate. Stamens equal in length to the corolla, distant: filaments white; anthers gray. Styles two, very seldom three, shorter than the stamens, bent back at top, permanent: stigma blunt. Capsule four-valved, with prominent sutures. Seeds somewhat kidney-shaped, striated, black^h.

Native of the Levant.—Introduced in 1773, by Mr. William Forsyth.—It flowers in june and julyⁱ.

5. Root perennial, whitish, branched, and woody. Stems very many, round, smooth, much jointed, leafy, herbaceous, purple at the base and procumbent, then

^a Jacquin & Gerard.^c Linn. spec.^f Jacquin.^h Murray in comm. gott.^b Hort. kew.^e Linn. spec.^g Hort. kew.ⁱ Hort. kew.

ascending.

ascending. Branches numerous, ending in slender erect branched peduncles. Leaves quite entire, glaucous, pulpy, sharpish, sessile and opposite. Petals twice or three times as long as the calyx, pale flesh-colour, obovate, emarginate or blunt. Filaments pale, almost the length of the corolla, anthers red. Styles slender, awl-shaped^k.

6. This differs from the next species in being twice or four times the size in all the parts. The structure is the same, but yet it is a different species. The stalk is upright, and a foot and half in height; the leaves are the length and breadth of a finger. It is perennial.—Native of Siberia^l. Introduced in 1777, by Abbé Nolin.—It flowers in July^m.

7. Stem shrubby at bottom, with leafy rudiments from the axils of the leaves, which are longer than the internodes, and acute at the end. Flowers in corymbs, white, with ovate petals. The ancients used this plant instead of soap; and it still answers this purpose in some parts of Spain, where it grows naturallyⁿ.

Introduced in 1774, by Monf. Richard.—It flowers in July and August^o.

8. Root perennial, very long, the thickness of a finger, white, woody. Stalks several, stiff, jointed, smooth, more than a foot long, branched, ending in a dense, fastigate cyme of flowers. Leaves glaucous-green, opposite, sessile, embracing the joints of the stalk with their broad bases, quite entire; the uppermost very small; next the root very many, two inches long, and a line and half broad: between the peduncles small, white stipules. Petals pale rose-colour. Capsule four-celled. Seeds black, lens-shaped^p.

The stalks in this species are procumbent before the flowers expand, which is not the case in *G. prostrata*; hence the flowers in this are all directed one way. Linneus observes that the flowers in Sweden are always white, and that in its wild state they are fastigate. The root, as in the foregoing species, has a saponaceous quality, and boiled with linnen or woollen may be used instead of soap^q.—Hence the name of *Saponaria*.—It is bitter, and has a solvent, aperient quality^r.

Native of Sweden, Germany, Switzerland? France, Siberia.—It flowers from June to August.—Cultivated in 1759, by Mr. Miller^s.

9. Root perennial, strong, fleshy, striking deep into the ground, sending up stalks two and three feet in height, as thick as the little finger at bottom, swelling at the joints, branching at short intervals from top to bottom; branches single, alternate, divided and subdivided; the first divisions of the flowering panicle dichotomous, the last trichotomous: pedicels slender and scattered on every side: flowers numerous, before they expand purple, but becoming paler, and at length white. Lower leaves subhirsute, glaucous, resembling those of Sopewort, but thicker; upper ones narrower and smooth, like those of Cucubalus Behen. Those at the base of the peduncles and pedicels very narrow, and the uppermost capillaceous. Capsule obtusely four-cornered, four-valved^t.

Native of Spain and the Levant. Flowering in July and August.—Cultivated in the Eltham garden in 1732.

β. Native of Spain.

10. Root annual, slender, small. Stalk diffused, a span in length, weak, and therefore seldom upright. Leaves very narrow, connate, often turned to one side, an inch and half long, from half a line to a line in breadth, bright green. The flowers come out at the divisions of the stalk singly, on setaceous peduncles, one at the end. Petals ferrate or emarginate, pale rose-colour, marked with darker lines, having a long greenish claw. Anthers whitish. Stigmas whitish, blunt^u.—It resembles *G. saxifraga*, but has not the calycine scales^x.

Native of Lapland, Sweden, Germany, Switzerland, France, Siberia.—It flowers with us from June to October.

^k Jacquin. ^l Linn. spec. ^m Hort. kew.
ⁿ Linn. fyft. & D'Affo. ^o Hort. kew.
^p Krock. ^q Linn. spec. & suec. ^r Krock.
^s Hort. kew. ^t Dillenius. ^u Krock.
^x Linn. spec.

In its wild state it is rather an autumnal plant, common in the stubble of cultivated fields; also by roadsides, on walls, and in marshy boggy places. I found it flowering in October 1778, in the stubbles about Vandouvre in the territory of Geneva.

It was introduced in 1773, by the Rev. John Lightfoot, M.A. and is biennial^y.

11. From a very fibrous root spring numerous little stems, not more than a span high, jointed, branched. Flowers pale red^z. Native of the South of France and Siberia.

12. Root perennial, woody, branched. Stalks in tufts, procumbent, a long span, or about nine inches in length, very much branched, bent, and changing their direction at each joint. Leaves on the younger stems crowded, very narrow. Flowers on long peduncles, on the extreme subdivisions, which are almost naked. At the base of the calyx are two pairs of broad scales, ending in long awns. Calyx itself short, five-cornered, with white wings. Petals emarginate, white, with rose-coloured lines^a. According to Linneus, the stalk is only three or four inches high, upright, filiform, dichotomous; leaves sharp; petals pale flesh-colour, with three obscure, purple streaks at the base. Scopoli observes, that the flowers have only eight stamens, or even fewer; that the capsule is four-valved, and the seeds compressed and black.—Native of France, Switzerland, Austria, Carniola. It flowers in July and August.—Introduced in 1774, by Monf. Richard^b.]

PROPAGATION AND CULTURE.

These plants having no great beauty, are rarely cultivated but in botanic gardens. They are propagated by seeds, sown in a bed of light earth, and when the plants are fit to remove, they may be transplanted into the places where they are designed to remain, and will require no other culture but to keep them clean from weeds; for the roots of most sorts will continue several years, and annually produce flowers and seeds.

[*Gypsophila aggregata*. See *Arenaria tetraquetra* β.]

H.

HACUB. See *Gundelia*.]

HÆMANTHUS. (From *Αἷμα*, blood, and *ἄνθος*, a flower.)

Lin. gen. n. 400. Reich. 432. Schreb. 546. Tournef. t. 433. Gertn. t. 11. Juss. 55. Dracunculoides. Boerb. 2. 266.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Spathaceæ*. *Narcissi*, Juss.

GENERIC CHARACTER.

CAL. Involucre six-leaved, very large, bearing an umbel: leaflets erect, oblong, permanent.

COR. monopetalous, erect, six-parted: parts erect, linear: tube very short, angular.

STAM. Filaments six, subulate, inserted into the tube, and longer than the corolla. Anthers incumbent, oblong.

PIST. Germ inferior. Style simple, length of the stamens. Stigma simple.

PER. Berry roundish, three-celled.

SEEDS solitary, three-cornered.

ESSENTIAL CHARACTER.

Invol. six-leaved, many-flowered. Cor. six-parted superior. Berry three-celled.

SPECIES.

1. *Hæmanthus coccineus*. Scarlet *Hæmanthus* or *Blood-flower*.

Lin. spec. 412. Reich. 2. 14. Comm. hort. 2. 127: t. 64. Ferr. cult. 137. Hern. mex. 885. t. 899.

Leaves tongue-shaped flat smooth and even, pressed close to the ground, in two rows, umbel contracted fastigate shorter than the involucre, border patulous.

^y Hort. kew. ^z Dalechamp. ^a Haller. ^b Hort. kew.

2. *Hæmanthus puniceus*. *Waved-leaved Hæmanthus* or *Blood-flower*.
Lin. spec. 413. *Reich.* 2. 14. *hort. cliff.* 127. *ups.* 88.
Ait. hort. kew. 1. 404. *Dill. elth.* 167. *t.* 140.
f. 167. *Trew. Ehret.* 44. *Gærtn. fruct.* 31.
Leaves oblong elliptic acute retuse waved, umbel contracted fastigiate, border and stamens erect.
- [3. *Hæmanthus pubescens*. *Downy-leaved Hæmanthus*.
Lin. syst. 316. *suppl.* 193. *Ait. hort. kew.* 404.
Leaves oblong-lanceolate hirsute on every side, umbel fastigiate-rounded, border and stamens erect.
4. *Hæmanthus ciliaris*. *Fringed Hæmanthus*.
Lin. spec. 413. *Reich.* 2. 14. *Ait. hort. kew.* 404.
Amaryllis ciliaris. Lin. syst. 320. *suppl.* 195.
Lilium afric. sphæricum, &c. Herm. lugdb. 375.
Bulbus oblongus, &c. Breyn. cent. t. 39.
Leaves lanceolate smooth ciliate, involucre broad shorter than the rounded umbel, border reflex.
5. *Hæmanthus toxicarius*. *Fan-leaved Hæmanthus*.
Ait. hort. kew. 405.
Amaryllis disticha. Lin. syst. 320. *suppl.* 195.
Leaves in two rows oblong flattish smooth, peduncles longer than the spathe and flower.
6. *Hæmanthus spiralis*. *Spiral-stalked Hæmanthus*.
Ait. hort. kew. 405.
Amaryllis spiralis. L'Herit. fert. angl. 10. *t.* 13.
Leaves bristle-shaped, scape filiform, at the base spiral and flexuose, involucre subulate shorter than the umbel, which bears from one to four flowers.]
7. *Hæmanthus carinatus*.
Lin. spec. 413. *Reich.* 2. 15.
Leaves linear keeled.
8. *Hæmanthus multiflorus*. *Many-flowered Hæmanthus* or *Bloodflower*.
Nodder monogr. Vallet. hort. t. 33. *De Bry floril.*
t. 44. *Swert. floril. t.* 62. *f.* 3. *Morif. bist. f.* 12.
t. 12. *f.* 11. *Rudb. elys. 2. t.* 210. *f.* 3. *Seba*
thes. 1. t. 12. *f.* 1, 2, 3.
Leaves three together, ovate-lanceolate, acuminate, keeled, waved, upright; umbel close, globular; petals spreading.

DESCRIPTIONS, &c.

1. Root large, bulbous, from which in autumn come out two broad flat leaves, of a fleshy consistence, shaped like a tongue, which turn backward on each side, and spreading flat on the ground, have a singular appearance all the winter; but in the spring they decay. The flowers are produced in autumn, just before the new leaves come out; they are of a bright red, in a large cluster, two or three inches from the bulb.

[It is a native of the Cape of Good Hope; and was cultivated by Mr. Miller in 1731^a.]

2. Roots composed of many thick fleshy tubers, forming a head, out of which arises a fleshy spotted stalk, spreading at top into several spear-shaped leaves, which are waved on their edges. Stalks a foot high; leaves six or eight inches long, and two broad in the middle. From the side of the stalk near the ground breaks out a strong fleshy scape, six or eight inches long with a large cluster of yellowish red flowers at top. [Berry obovate, fleshy, scarlet: flesh soft, thin: partitions membranaceous: cells generally unequal, one larger and fertile, the others smaller and barren, or even quite obliterated. Seed ovate, narrowing downwards, obscurely three-cornered, pale, upright when ripe, but before that time horizontal^b.

This is a native of Africa; it was received from Holland, and cultivated in 1722 at Eltham, by James Sherard, M. D.^c

3. Found at the Cape of Good Hope by Thunberg and Maffon.—It flowers in august; and was introduced in 1774^d.

4. Bulb large. Leaves like those of the first species, but ciliate, as in *Amaryllis guttata*, which however has much narrower leaves, more like those of *Narcissus*. The cilia in this are brown, whereas in the *Amaryllis* they are pale.—It is a native of the Cape of Good Hope; and was introduced in 1774, by Mr. Francis Maffon^f.

5. This also is a native of the Cape, where it was found both by Thunberg and Maffon. The flowers are flesh-coloured. It was introduced in 1774^e.

6. A native of the Cape, and flowers with us in september. It was introduced in 1774, by Maffon^h.

See *Amaryllis spiralis*, which is the same plant.]

7. This has a large bulbous root sending out three or four leaves, a foot long or more, not flat but hollowed like the keel of a boat, and more erect than those of the first sort, but not quite so broad: the flowers are of a paler red.

Native of the Cape. Mr. Miller received the roots from Dr. Adrian van Royen, professor of botany at Leyden.

[8. Bulb from one to three inches in diameter, the upper part tinged of a red colour, and speckled like the stalk. Scape from eight to eighteen inches in height, speckled with dark red almost to the top, round or flattened, sometimes fluted on one side. Umbel of flowers from three to nine inches in diameter, containing from twelve to forty, fifty or sixty flowers. Involucre or spathe not always of six leaves, but varying from three to seven; the leaves are oblong, bent back to the stalk, and permanent. Peduncles one inch long, with a white bracte like a thread at the base of each. Corolla of a clear shining blood-red colour, divided to the bottom into six narrow parts, which are pointed and spread out wide. Filaments upright, curved a little upwards, divaricating. Anthers of a fine bright gold colour, with a small black speck. Style the length of the stamens; both longer than the corolla. Seed-vessel a roundish berry. The leaves are on a separate stalk by the side of the scape, of a fine light-green colour, from six to twelve inches in length or more, in breadth from two to four inches. The regular number seems to be three, but some plants have only two, and others four, five or six. The leaf-stalk is speckled like the scape, and emerges from a cup or large scale of a dusky red colour on the outside, about the time when the spathes or involucre open to show the flower. The leaves stand in some plants nearly as high as the bottom of the flowers; in others, as high as the top or even higher; and do not display themselves entirely till after the flowers are passed.

Native of Sierra Leone in Africa. It was sent to the Paris garden by the younger Robin from Guinea in 1603. He found it abundantly in the islands on the coast, called Bugigos, in woods near the shore; since that it has been lost in Europe till about the year 1794. Vallet's figure is erroneous, yet it is implicitly copied by De Bry, Swertius, Morison and Rudbeck. Seba's is different, and much better.]

PROPAGATION AND CULTURE.

The first and seventh sorts are with difficulty propagated in Europe, for their roots put out offsets but sparingly, the gardens in Holland therefore are supplied with them from the Cape of Good Hope, where they naturally grow, and produce seeds; the plants are too tender to thrive in this country in winter in the open air, therefore the roots must be planted in pots filled with light loamy earth, and, in the winter, placed in a dry glass-case, where, during that season, the leaves will be in full vigour, and make a pretty appearance, when intermixed with other plants in the stove; though they seldom flower here, yet are they worthy of a place in every garden where there is convenience of keeping them. The roots may be taken up when their leaves are decayed, and kept out of the ground till august, when they should be new potted, and may remain abroad till the end of september, at which time they may be removed into the glass-case; and during the time they are growing, will require to have frequent waterings, but it must not be given to them in large quantities.

If a border is made either against the front of the green-house or stoves, which may be contrived so as to be covered with glasses in winter, in which these roots, with the African *Gladiolus*'s, *Ixia*'s, Persian *Cyclamens*, &c. are planted in the full ground, they

^a Hort. kew. ^b Gartner. ^c Dillenius. ^d Hort. kew.
^e Linn. spec. ^f Hort. kew.

^g Linn. suppl. and Hort. kew.

^h Hort. kew.

will flower more constantly, and the foot-stalks will rise much higher than those kept in pots.

The second sort is also a native of the Cape of Good Hope, from whence it was first brought to Holland, where it has been propagated and dispersed over Europe; this may be propagated by parting the roots; the best time for this is in the spring, before the plants put out new stalks, which is also a right time to shift and new-pot them; but as the roots do not multiply very fast in offsets, the best way is to propagate them from seeds, which they ripen plentifully in England; these should be sown soon after they are ripe, in pots filled with light earth, and kept in the stove all the winter; if these pots are plunged into the tan-bed in the bark-stove, in the vacancies between the plants, the earth will be kept warm, and will not dry so fast, as when they are placed in a dry stove, so the seeds will be sooner prepared to vegetate; in the spring the pots may be taken out of the stove, and plunged into a hot-bed, which will bring up the plants; these must have air admitted to them every day in mild weather, to prevent their drawing up weak; and when they are fit to remove, they may be each planted in a separate small pot filled with light earth, and plunged into the hot-bed again, to promote their taking new root; then they must be gradually hardened, and afterwards may be removed into the dry stove, where they should constantly remain, otherwise the plants will not thrive and flower in this country. In the winter season they must not have too much wet, for as their roots are fleshy and succulent, they are apt to rot with moisture. In the summer they must have a large share of air in warm weather, and require to be frequently watered, especially during the time of their flowering.

HÆMATOXÏLUM. (From *Αἷμα*, blood, and *ξύλον*, wood.)

Lin. gen. n. 525. *Reich.* 567. *Schreb.* 708. *Rottboell coll. basn.* 2. 254. *Juss.* 348.

Class. 10. 1. Decandria Monogynia.

Nat. order of Lamentaceæ.—Leguminosæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, coloured: *tube* very short, pitcher-shaped, fleshy, permanent: *border* five-parted, spreading, deciduous: *parts* oblong, blunt; the four upper ones equal, the lowest a little longer than the rest.

COR. *Petals* five, lanceolate, broadest at top, blunt, veined, spreading, nearly equal, inserted into the calyx, and larger than its divisions.

STAM. *Filaments* ten, subulate, hairy at bottom on the inside, upright, unequal, scarcely longer than the corolla, inserted into the calyx. *Anthers* oval, small.

PIST. *Germ* oblong-fibre-shaped, compressed. *Style* capillary, bent at the tip, longer than the stamens. *Stigma* funnel-shaped.

PER. *Legume* lanceolate, flat, blunt, one-celled, edged on each side with a thickish suture that does not open, opening by the bursting of the valves in the middle longitudinally, and dividing into two unequal boat-shaped parts.

SEEDS few, oblong, compressed, furrowed, fixed to one of the futures.

ESSENTIAL CHARACTER.

Cal. five-parted. *Pet.* five. *Legume* lanceolate, valves boat-shaped.

SPECIES.

1. *Hæmatoxylum campechianum.* *Logwood.* *Bloodwood.* *Campeche-wood.*

Lin. spec. 549. *Reich.* 2. 267. *hort. cliff.* 160. *mat. med.* 114. *Plenck, ic. t.* 329. *Woodv. med. bot.* 48. *t.* 17. *Jacqu. obs.* 1. 20. *Swartz obs.* 170. *Brown. jam.* 221. *Sloan. jam.* 2. 183. *Catesby car.* 3. *t.* 66. *Raii hist.* 3. *dendr.* 132. (*Lignum campechianum*).

DESCRIPTION, &c.

This tree grows naturally in the bay of Campeche, at Honduras, and other parts of the Spanish West Indies, where it rises from sixteen to twenty-four feet high. The stem is generally crooked, and seldom thicker than a man's thigh. [The inner bark is red,

and the wood is hard. Branches subdivided, flexuose, prickly, round, ash-coloured. Leaves pinnate: petioles alternate, patulous, round, smooth; leaflets four pairs, on very short petiolules, generally obcordate, entire, small, veined, very smooth and shining, spreading in the day time, but at night upright, converging. Prickles strong, middling in size, above the petioles. Racemes axillary, simple, upright, the length of the leaves, solitary, many-flowered. Flowers peduncled, numerous, small, pale yellow; on short, scattered, simple, coloured peduncles. Calyx bell-shaped at the base and very small, the parts lanceolate, convex, reflex, purple; the bottom nectareous. Petals ovate, blunt, equal; with short claws. Anthers incumbent, revolute. Germ lanceolate, on a short pedicel. Stigma dilated, perforated.—It flowers in march and april, and ripens its seeds in july^a.

It was cultivated here by Mr. Miller in 1739^b.

Logwood was first propagated in Jamaica in 1715, from seeds brought from the bay of Campeche. In the neighbourhood of Savannah la Mar such quantities of it now grow wild as to incommode the landholders extremely; occupying that district, as the Opoponax and Cashew have the southern parts of Middlesex county. It was first introduced to prevent the necessity of forming settlements upon the Spanish Main, but the event did not fully answer the benevolent intentions of those who first cultivated it. It makes an impenetrable and beautiful fence. The smaller stems are made into hoops^c.

Both the bark and gum are gentle subastringents; but the last excels, and adds a sweetness to its virtue, which makes it more agreeable to the palate^d.]

PROPAGATION AND CULTURE.

The seeds are frequently brought from America, which, if fresh, readily grow when sown upon a good hot-bed; and if the plants are kept in a moderate hot-bed, they will grow to be upwards of a foot high the same year, and, while the plants are young, they are generally well furnished with leaves; but afterwards they make but little progress, and are frequently but thinly clothed with leaves. These plants are very tender, so should be constantly kept in the bark-stove, where, if they are duly watered, and the stove kept in a good degree of heat, the plants may be preserved very well.

[In the West Indies it thrives best in low swampy lands, or shallow waters, where the bottom is rich and moderately firm^e.

HAIR-GRASS. See *Aira*.

HALBERT-WEED. See *Calea*.

HALECUS. See *Croton*.]

HALESIA. (So named by Ellis, in honour of the learned and venerable Stephen Hales, D.D. F.R.S. author of *Vegetable Staticks*, 1727.)

Lin. gen. n. 596. *Reich.* 651. *Schreb.* 814. *Gertn. t.* 32. *Juss.* 156.

Class. 11. 1. Dodecandria Monogynia.

Nat. order of Bicornes.—Guajacana, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, very small, superior, four-toothed, permanent.

COR. monopetalous, bell-shaped, ventricose; *mouth* four-lobed, blunt, patulous.

STAM. *Filaments* twelve (seldom sixteen), subulate, upright, a little shorter than the corolla. *Anthers* oblong, blunt, upright.

PIST. *Germ* oblong, inferior. *Style* filiform, longer than the corolla. *Stigma* simple.

PER. *Nut* corticate, oblong, narrowing to both ends, four-cornered, the corners membranaceous, two-celled. (*Drupe* four-celled, G.)

SEEDS solitary.

ESSENTIAL CHARACTER.

Cal. four-toothed, superior. *Cor.* four-cleft. *Nut* quadrangular, with two seeds.

^a Swartz obs.

^b Hort. kew.

^c Long's Jamaica, 754.

^d Browne.

^e Ibid.

SPECIES.

SPECIES.

1. *Halefia tetraptera*. *Four-winged Halefia*, or *Snow-drop Tree*.
Lin. spec. 636. *Reich.* 2. 417. *Ellis in philos. trans.*
vol. 51. *p.* 931. *t.* 22. *f.* A. *Gärtn. fruct.* 160.
Catesb. car. 1. *t.* 64.
Leaves lanceolate-ovate, petioles glandular.
2. *Halefia diptera*. *Two-winged Halefia*.
Lin. spec. 636. *Reich.* 2. 417. *Ellis in philos. trans.*
t. 22. *f.* B.
Leaves ovate, petioles smooth and even.

DESCRIPTIONS, &c.

1. This frequently comes up with two or three stems, from fifteen to twenty feet high, sending out branches towards their tops. Leaves ferrate, [sharp-pointed, with the middle depressed, growing alternately on short foot-stalks. The flowers hang in small bunches all along the branches, each gem producing from four to eight or nine; they are of a pure snowy whiteness; and as they blow early in the spring, before the leaves appear, and continue for two or three weeks, they make a most elegant appearance. They are followed by pretty large four-winged fruit, hanging likewise in bunches, and very agreeable to the taste^f.

The fruit is a juiceless drupe, of an oblong obovate shape, four-sided, finishing at top in the style, at bottom in a very long peduncle: bark thin, fungous and membranaceous, drawn out into four stiff lateral wings: shell bony, obovate, sharp-pointed at each end, within empty or having a scurfy fungous substance in the middle, and four cells with a seed in each, inclosed all round in the periphery. The seeds are fixed to the bottom of the cells, and are oblong, a little bent, and of a pale colour^g.

Native of South Carolina, growing commonly along the banks of Santee river, and sometimes more southerly. The wood is hard and veined; and the bark of a darkish colour, with many irregular shallow fissures^h.

It flowers in april and may. Introduced in 1756, by John Ellis, Esq.ⁱ from seeds sent over by Dr. Alexander Garden, physician at Charlestown^k.

2. The leaves of this are six times the size of the foregoing, nor are they at all tomentose underneath. Fruit mucronate, with two large wings opposite to each other, and two minute ones^l.

Received by John Ellis, Esq. from Governor Ellis of Georgia, and sent to him by Mr. De Brahme, from Augusta in Georgia, three hundred miles up the river Savannah^m.]

PROPAGATION AND CULTURE.

These plants are propagated by seeds, when they can be procured fresh from the places of their natural growth. These should be sown in pots as soon as the seeds arrive, plunging the pots into the ground, in a situation where they may have only the morning sun. The seeds often remain a year in the ground, therefore the earth in the pots should not be disturbed, until there is no probability of the seed growing. When the plants appear they should be screened from the sun, and frequently, but not too plentifully watered; for while the plants are young, much moisture will rot their shanks. The following autumn, the pots should be placed in a common frame, where the plants may enjoy the free air in mild weather, and be screened from frost. The spring following, before the plants begin to shoot, they should be each put into a separate small pot, plunging them in a frame, where they should be shaded from sun; and in the summer placed in a shady situation, screening them in winter; and the spring following they may be turned out of the pots, and planted in the full ground where they are designed to remain.

HALESIA. See *Guettarda* and *Trichilia*.

HALICACABUM. See *Cardiospermum* and *Physalis*.

HALIMUM. See *Sesuvium*.

HALIMUS. See *Atriplex* and *Portulaca halimoides*.

HALLERIA. (So named by Linneus, from the famous Albert Haller, author of *Stirpes Helveticæ*, and other considerable works in botany, &c.)

^f Garden in *philos. trans.* p. 930.

^h *Philos. trans.*

ⁱ *Hort. kew.*

^g Gärtner.

^k *Philos. trans.*

^l *Linn. spec.*

^m *Philos. trans.* 51. 931.

Lin. gen. n. 761. *Reich.* 819. *Schreb.* 1020. *Juss.* 118.

Class. 14. 2. *Didynamia Angiospermia*.

Nat. order of *Personatae*.—*Scrophulariæ*, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, trifold, flat, spreading, very obtuse, permanent: the upper cleft twice as broad as the rest.

COR. monopetalous, ringent: tube roundish at the base, bent in with a swelling throat: border oblique, upright, four-cleft; the upper cleft a little longer than the others, blunt, emarginate; the side ones shorter, broader, sharper; the lowest very short, very slender, and very sharp.

STAM. *Filaments* four, bristle-shaped, straight, inserted into the tube, longer than the corolla. *Antthers* roundish, twin.

PIST. *Germ* inferior, ovate, ending in a style longer than the stamens. *Stigma* simple.

PER. *Berry* roundish, two-celled.

SEEDS small, flat, roundish, winged.

ESSENTIAL CHARACTER.

Cal. trifold. Cor. quadrifid. Filam. longer than the corolla. Berry inferior, two-celled.

SPECIES.

1. *Halleria lucida*. *African Fly-Honeysuckle*.

Lin. spec. 872. *Reich.* 3. 161. *hort. cliff.* 323. *Burm. afr.* 244. *t.* 89. *f.* 3. (*Lonicera*). *Amm. herb.* 591. (*Solanum*).

[β. *H. fol. lanceolatis ovatis superne ferratis*. *Roy. lugdb.* 289. *Burm. afr.* 243. *t.* 89. *f.* 1.]

DESCRIPTION, &c.

This plant grows to the height of six or eight feet, with a woody stem well furnished with branches. Leaves ovate, ferrate, opposite, and continuing green through the year; the flowers come out singly, and are of a red colour, but being intermixed with the leaves, and growing scatteringly on the branches, are not easily discerned. They come out in june, and the seeds ripen in september. The leaves continuing green all the winter, this plant makes a good variety in the greenhouse during that season.

[It is a native of the Cape of Good Hope; flowers from june to august, and was cultivated by Mr. Miller in 1752^a.]

PROPAGATION AND CULTURE.

It may be propagated by cuttings, which if planted in pots filled with light earth in june, will soon take root. The plants may be exposed in summer, and will require plenty of water at that season: in winter they must be housed with Myrtles, and other hardy exotic plants, which require much air in mild weather.

[HALM. See *Arundo*.

HALORAGIS. (From *αλς*, *αλος*, the sea, and *ραγος* *acinus* or *grape-stone*; because it grows on the sea coast, and the seeds resemble grape-stones.)

Lin. gen. *Schreb. n.* 686. *Forst. gen.* 31. *Jacqu. misc.* 2. 333. *Cercodia*. *Murr. comm. gott.* 1780. *p.* 3. *Gärtn. t.* 32. *f.* 6. *Juss.* 318, 451.

Class. 8. 4. *Octandria Tetragynia*.

Nat. order of *Calycanthemæ*.—*Onagrea*, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* quadrifid, superior, fastened about the germ, permanent.

COR. *Petals* four, oblong, blunt, concave, spreading, with narrow claws, inserted into the calyx.

STAM. *Filaments* eight, filiform, upright, shorter than the corolla, inserted into the calyx. *Antthers* oblong, four-furrowed, upright.

PIST. *Germ* inferior. *Styles* four, upright. *Stigmas* simple, blunt.

PER. *Drupe* dry, roundish, crowned with the permanent calyx.

SEED. *Nut* bony, four-celled, with one kernel in each cell.

ESSENTIAL CHARACTER.

Cal. four-cleft, superior. Petals four. Drupe dry, inclosing a four-celled nut.

^a *Hort. kew.*

1. *Haloragis prostrata*.
Lin. syst. 381. *suppl.* 229. *Forst. gen.* 62. *t.* 31.
fl. austr. n. 179. *L'Herit. stirp. nov.* IV. 82.
Leaves oblong quite entire mucronate, fruits globular.
2. *Haloragis Cercodia*.
Medic. bot. beobacht. 1783. *p.* 73. *Ait. hort. kew.*
2. 37.
H. Tetragonia. *L'Herit. stirp. nov.* 82.
H. alata. *Jacqu. ic.* 1. *t.* 69. *misc.* 2. 332. *icon. rar.*
t. 26. *Forst. fl. austr. n.* 180.
Cercodia erecta. *Murr. comm. gott.* 1780. *p.* 3. *t.* 1.
Tetragonia ivæfolia. *Lin. syst.* 467. *suppl.* 257.
Leaves serrate, flowers in whorls.

DESCRIPTIONS, &c.

1. Branches four-cornered, smooth. Leaves opposite, sessile, tapering at the base into the insertion, waved, smooth. Fruits axillary, solitary, pedicelled. When the fruit is in a state of maturity, this plant bears a great resemblance to *Ammannia latifolia*^a.

Native of Botany island, near New Caledonia, September 30, 1774: in the isle of Pines, &c. in the South seas.

2. This is an undershrub, with much of the appearance of *Prasum majus*. It is about two feet high, branched, panicled, upright. Stalk quadrangular and red; the angles elevated, rounded, scabrous. Leaves opposite, petioled, horizontal, ovate-lanceolate, unequally serrate; with the serratures prickly; scabrous, flat, veined, an inch in length: petioles one-third of the length of the leaves, semicylindric, channelled. Flowers at the ends of the branches, axillary, in threes, peduncled, small, reddish green. Peduncles short, round, scabrous, reflected below the leaves after flowering-time. Petals lanceolate, wider in the middle, standing out between the leaflets of the calyx, spreading very much, longer than the calyx, caducous^b; pale purple. Pericarp white; nut black. When other circumstances agree, the fruit being quadrangular-winged or without angles, is not sufficient to constitute a generic difference^c.

Found abundantly in New Zealand by Sir Joseph Banks, Bart. and others. The younger Linneus informs us that it flowered with him in November 1779; and that some of the flowers had petals, others none.—With us it flowers most part of the summer, and was introduced in 1772^d.]

HAMAMELIS. (*A name in Eustathius from Pausanias and Hippocrates, Ἀμαμηλῖς: so called because it flowers with the apple.*)

Lin. gen. n. 169. *Reich.* 181. *Schreb.* 226. *Juss.* 288. *Trilopus.* *Mitch.* 22.

Class. 4. 2. *Tetrandria Digynia.*

Nat. order of Berberides, Juss.

GENERIC CHARACTER.

CAL. *Involucre* three-leaved, three-flowered: the two inner leaflets roundish, smaller, blunt; the outmost larger, lanceolate.—*Perianth* double: the outer two-leaved, smaller, roundish; the inner four-leaved, upright, the leaflets oblong, blunt, equal.

COR. *Petals* four, linear, equal, very long, blunt, reflex. *Nectary* of four truncate leaflets, growing to the corolla.

STAM. *Filaments* four, linear, shorter than the calyx. *Anthers* two-horned, bent in.

PIST. *Germ* ovate, villose, ending in two styles, which are of the same length with the stamens. *Stigmas* capitate.

PER. none.

SEED. *Nut* ovate, half covered with the calyx, blunt, furrowed on both sides at the tip, having two little horns spreading horizontally, two-celled, two-valved.

ESSENTIAL CHARACTER.

Invol. three-leaved. *Perianth* four-leaved. *Pet.* four. *Nut* two-horned, two-celled.

SPECIES.

1. *Hamamelis virginica.* *Witch-Hazel.*
Lin. spec. 180. *syst.* 167. *Reich.* 1. 351. *Gron. virg.* 139. *Gold. noveb.* 18. *Catesb. car.* 3. *t.* 2.
Dubam. arb. 1. 287. *t.* 114. *Mill. illustr. ic.*

^a Linn. suppl.

^b Ibid.

^c Jacqu. misc.

^d Hort. kew.

DESCRIPTIONS, &c.

This has a woody stem, from two to three feet high, sending out many slender branches. Leaves oval, indented on their edges, having great resemblance to those of the Hazel, and placed alternately on the branches: these fall away in autumn, and then the flowers come out in clusters from the joints: they are not followed by seeds in this country.

[It seems to be polygamous, for in Virginia it is dioecous, with axillary, peduncled, crowded, petaloid flowers: in Carolina it is monoecous, with terminating; many-stamened, apetalous flowers, in spikes. Whether these are distinct species or not, may be doubted; since they are so very much alike in the herb^e.

In New England, the germ endures the severity of their winters, and the fruit does not ripen till the September succeeding, when ripe fruit and fresh blossoms will be found on the same tree.

The Indians consider this tree as a valuable article in their materia medica. They apply the bark, which is sedative and discutient, to painful tumours and external inflammations. A cataplasm of the inner rind is found to be very efficacious in removing painful inflammations of the eyes^f.

It was introduced in 1736, by Peter Collinson, Esq.^g

PROPAGATION AND CULTURE.

This is propagated by laying down the young branches in autumn, which will take root in one year, provided they are duly watered in dry weather; but many of the plants which are in the gardens, have been produced from seeds which came from America; these seeds always remain a whole year in the ground, so they should be sown in pots, which may be plunged into the ground in a shady part of the garden, where they may remain all the summer, and require no other care but to keep the pots clean from weeds, and in very dry weather to water them now and then; in autumn the pots may be removed to a warmer situation, and plunged into the ground under a warm hedge; and if the winter should prove very severe, they should have some light covering thrown over the pots, which will secure the seeds from being destroyed. In the spring the plants will come up, therefore as the season grows warm, the pots may be removed where they may have the morning sun till eleven o'clock; and if they are duly watered in dry weather, the plants will have made good progress by autumn, when they should be transplanted, either into small pots, or in a nursery-bed, where in one, or at most two years time, they will be strong enough to plant where they are designed to remain; they love a moist soil, and a shady situation.

[**HAMDAMANIAS.** See *Grewia*.]

HAMELIA. (*So named from Jean Baptiste du Hamel du Monceau, the celebrated author of several valuable books on Trees.*)

Lin. gen. n. 232. *Reich.* 249. *Schreb.* 205. *Jacqu. amer.* 71. *Juss.* 207.

Class. 5. 1. *Pentandria Monogynia.*

Nat. order of Rubiaceæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-parted, acute, very small, superior, upright, permanent.

COR. monopetalous: *tube* five-cornered, very long: *border* five-parted, equal, small, acute.

STAM. *Filaments* subulate, inserted at the middle of the corolla. *Anthers* oblong, linear, the same length with the corolla.

PIST. *Germ* ovate, with a conical tip, inferior. *Style* filiform, the same length with the corolla. *Stigma* linear, blunt.

PER. *Berry* oval, furrowed, five-celled, crowned.

SEEDS very many, roundish, compressed, very small.

ESSENTIAL CHARACTER.

Cor. five-cleft. *Berry* five-celled, inferior, many-seeded.

SPECIES.

1. *Hamelia patens.*
Lin. spec. 246. *syst.* 215. *Reich.* 1. 480. *Swartz*

^e Linn. mant.

^f Cutler amer. acad. mem. 1.

^g Hort. kew.

obf. 77. *Jacqu. amer.* 72. t. 50. *piet.* 39. t. 72.
Plum. ic. 218. f. 2. (*Periclymenum*).
H. coccinea. *Swartz prodr.* 46.
Racemes terminating; coloured, leaves ternate, villose, pubescent.

- [2. *Hamelia grandiflora.* *Great-flowered Hamelia.*
L'Herit. fert. angl. 4. t. 7. *Ait. hort. kew.* 1. 229.
Brown. jam. 166. 1. (*Campanula*). *Sloan. jam.*
 2. 63. t. 183. f. 2. *Raii bibl.* 3. 115. (*Nerio*
affinis).

H. ventricosa. *Swartz prodr.* 46.
Racemes terminating and axillary, leaves ternate, levigated, tube of the corolla bell-shaped.

3. *Hamelia axillaris.*
Swartz prodr. 46.
Subherbaceous, racemes axillary; flowers mostly directed one way, sessile; leaves ovate-lanceolate.

4. *Hamelia Chrysantha.*
Swartz prodr. 46. *Brown. jam.* 166. 2. t. 14. f. 1.
 (*Campanula*). *Plum. ic.* 218. f. 1. (*Periclymenum*).

Racemes terminating, leaves oblong, wedge-shaped, acuminate, very smooth, flowers pedicelled.

DESCRIPTIONS, &c.

1. This is a shrub or small tree] growing five or six feet high. [Branches diverging, spreading, round, smooth. Leaves usually ternate (but sometimes there are four or five leaflets on a petiole,) ovate, acuminate, entire, nerved, the upper surface pubescent, hoary on the back, villose, soft, coloured about the edge. Petioles coloured, the midrib red. Stipules in pairs, within the petioles, awl-shaped. Racemes spreading, red; the subdivisions trichotomous: flowers directed one way, subsessile, distant, bright red or scarlet; there is one solitary flower sessile at the subdivisions. Calyx five-toothed, coloured. Berry black^a.

Native of Hispaniola, where Swartz has observed it, in hedges on the mountains. Mr. Miller cultivated it in 1768.] He says that the seeds were brought from Senegal by Adanson, and that Houstoun found it in America.

2. This grows to be a large and stately tree, affording very broad boards for tables or cabinets, of the softness and grain of elm, whence the name of *Spanish Elm*, having many undulated light brown or gray lines in it. The cabinet-makers, who use it very much, call it *Prince-wood*. The bark is ash-coloured, and very smooth. The ends of the branches are beset with leaves two inches long, and one broad in the middle, from whence they decrease in breadth to both extremes; they are smooth, not ferrate, of a fresh green colour, and set on foot-stalks three quarters of an inch long. The flowers stand several together; they are large, from a narrow base opening wider, almost like a bell-flower, of a sulphureous colour, or like the yellow flowers of the Marvel of Peru. It is sent to Europe in great quantities for the use of cabinet-makers, &c. and when young it makes good hoops^b.

It is native of Jamaica, Hispaniola, and other parts of the West-Indies.—It flowers here from september to november; and was introduced in 1778, by Thomas Clark, M.D.^c

3. Native of Jamaica and Hispaniola^d.

4. This is a native of Jamaica. According to Browne, the size and the different dispositions of their leaves make the whole difference between this and the second species. The height seldom exceeds four feet. The flowers are yellow, and the leaves entire.]

PROPAGATION AND CULTURE.

1. This plant is propagated by seeds, when they can be procured fresh from the countries where it grows naturally: these should be sown in small pots, and plunged into a moderate hot-bed: the plants generally appear in about five or six weeks after, and should then be treated in the same way as other plants from the same countries; giving them proper air in warm weather, and gently refreshing them with water; and when they are fit to transplant, they should be each planted in a small pot, plunging them into the hot-

^a Swartz.

^b Sloane.

^c Hort. kew.

^d Swartz.

bed again, where they should be shaded from the sun until they have taken new root, when they should have air and moisture according to the warmth of the season. In the autumn the plants must be removed into the tan-stove; plunging the pots into the bed, where they should be always continued: this flowers in July and August, when it makes a pretty appearance.

As the seeds of this plant are seldom brought to England, so the plant may be propagated by cuttings, which if planted in small pots, plunged into a moderate hot-bed, and closely covered with either bell or hand-glasses, will put out roots in about six weeks, and may then be treated in the same way as the seedling plants.

[HAPALANTHUS. See *Callisia*.

HARD-BEAM TREE. See *Carpinus*.

HARD-GRASS. See *Dactylis*.

HARE-BELLS. See *Hyacinthus*.

HARE'S-EAR. See *Bupleurum*.

HARE'S-FOOT FERN. See *Trichomanes*.

HARE'S-TAIL RUSH. See *Eriophorum vaginatum*.]

HARMALA. See *Peganum*.

[HARMESIAS. See *Brownea*.

HARTOGIA. (In memory of Hartog, a Dutch gardener; and a celebrated traveller to the Cape of Good Hope.)

Lin. gen. Schreb. n. 197. *suppl.* 16. *Thunb. nov. gen.* 86. *Schrebera Juss.* 379.

Class. 4. 1. *Tetrandria Monogynia*.

Nat. order of Dumosa.—Rhamni, Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-cleft, smooth, permanent: *clefts* acute, very short.

COR. *Petals* four, ovate, obtuse, spreading.

STAM. *Filaments* four, very short, inserted into the base of the germ. *Antbers* ovate, furrowed.

PIST. *Germ* superior, ovate, smooth. *Style* simple, subulate. *Stigma* acute.

PER. *Drupe* juiceless, ovate, smooth, or a little roughish, (scarcely as big as a hazel nut.)

SEED. *Nut* with two seeds, somewhat fleshy.

ESSENTIAL CHARACTER.

Cal. five-cleft. *Pet.* four, spreading. *Drupe* ovate, inclosing two seeds.

SPECIES.

1. *Hartogia capensis.*

Lin. syst. 165. *suppl.* 128.

DESCRIPTION, &c.

This is a tree, with oblong, ferrate, blunt, smooth leaves. The flowers are axillary, minute, peduncled. Thunberg discovered it in the woods near the Cape of Good Hope^e.

HARTOGIA. See *Diosma*.

HART-ROOT. See *Athamanta*.

HART'S-TONGUE. See *Asplenium*.

HART-WORT. See *Tordylium*.

HASEL. See *Corylus*.

HASSAGAY-TREE. See *Curtisia*.]

HASSELQUISTIA. (So named by Linneus, in memory of his pupil, Fridric Hasselquist, M.D. who travelled into the Holy Land, &c. and died at Smyrna in 1752. His travels are published.)

Lin. gen. n. 341. *Reich.* 360. *Schreb.* 462. *Gartn. t.* 21. *Juss.* 224.

Class. 5. 2. *Pentandria Digynia*.

Nat. order of Umbellatae or Umbelliferae.

GENERIC CHARACTER.

CAL. *Umbel* spreading. *Umbellules* ten, five of which are in the circumference.—The rudiment of the central umbellule is a mortified vitiated body, pedicelled, somewhat three-sided, fleshy, depressed, dark-coloured, hoary above, with white hairs.—*Involucre* very small, five-leaved, subulate, reflex. *Involucels* halved: those of the outer ones three-leaved, subulate, nodding, shorter than the umbellule.—*Umbel* when fruit-bearing converging.

COR. *Flowers* radiate, even of the inner umbellules. *Floscules* of the ray hermaphrodite: petals unequal, bowed in and bifid, the outmost petal two clefts, and the next single one large, (so that in each corollule there are four clefts large, and six small). *Floscules* of

^e Linn. suppl.

the inner disk male: petals nearly equal, bowed in and bifid (all the clefts small).

STAM. *Filaments* five to all the floscules, longer than the smaller petals. *Antbers* roundish.

PIST. *Germ* inferior. *Styles* filiform, permanent. *Stigmas* obtuse.

PER. none.

SEEDS *outermost* double, oval, smooth, the edge thicker, crenulate. *Inner* solitary, hemispherical, drooping, pitcher-shaped, with the side hollow; these also are furnished with two styles.

In the inner disk none.

ESSENTIAL CHARACTER.

Cor. radiated, in the disk male. *Seeds* in the circumference double, with a notched edge: in the disk solitary, pitcher-shaped, hemispherical. (outer orbiculate, flat, inner bullate. G.)

SPECIES.

1. *Hasselquistia ægyptiaca*. *Egyptian Hasselquistia*.
Lin. spec. 355. *fst.* 275. *Reich.* 1. 660. *amoen.*
4. 270. *mant.* 217. *suppl.* 179. *Jacqu. hort.*
1. 37. *t.* 87. *Gouan. illustr.* 11. *Gærtn. fruct.*
84.

Leaves pinnate, leaflets pinnatifid.

2. *Hasselquistia cordata*. *Heart-leaved Hasselquistia*.
Lin. fst. 275. *suppl.* 179. *Jacqu. hort.* 2. 91.
t. 193. *Gærtn. fruct.* 85.

Leaves heart-shaped.

DESCRIPTIONS, &c.

1. Root fusiform, smaller than the finger, white, annual. Stem a foot and half high, upright, round, white, with rough hairs, finally muricate-scabrous. Branches from the upper axils, simple. Leaves alternate, remote, petioled, toothed, blunt, scabrous underneath on the ribs. Petiole scabrous. Sheath bellying, woolly white at the base, and on the upper edge, purple on the lower edge. Umbels of flowers at the top of the stem, and at the ends of all the branches. Peduncle five-cornered, muricate. Corolla white. Anthers greenish. Stamens and styles white^b.

The outer seeds are of a pale straw-colour. The inner are naturally double as well as them, but one is constantly abortive, and adheres to the inner side of the other near the top, in form of a withered scale: the other as it grows, turns into a membranaceous bulla, opening on the inner side by a large fungous hole surrounded with a crenulate margin, and has only a single embryo in it^c.

Native of Egypt.—Cultivated in 1768, by Mr. Miller. It flowers in July^d.

2. Annual. Stem upright, flexuose, a little streaked, hairy at bottom. Lower leaves ternate: the side leaflets subsessile, ovate, crenate, that at the end petioled, cordate, crenate, obtuse: upper leaves cordate, simple. Involucre of many reflex bristles, shorter by half than the corolla: involucels bristle-shaped, the length of the flowers. Umbel copious, flat, white, without the central body. Marginal petals of the umbellules two, larger, flat, obovate; the rest nearly equal, small, ovate, entire^e. Seeds very like those of the foregoing, but much smaller: those in the ray membranaceous and compressed, surrounded with a smooth, narrow, white rim, and within that of a dirty ferruginous colour: those in the centre ovate-bullate, ferruginous bay colour on the back, surrounded at the aperture with a thickened, smooth, white rim^f.

It varies with all the leaves simple and ternate^g. Introduced in 1787, by Mr. Zier^h.]

PROPAGATION AND CULTURE.

These plants are biennial, and being natives of warm countries, are with difficulty preserved in England; for when the plants come up early in the spring, they do not perfect their seeds the same year; and those plants which arise in the autumn, seldom live through the winter; the surest method therefore to procure good seeds in this country, is to sow the seeds in pots about the middle of August, placing the pots where they may have the morning sun only, being careful to

water them duly, to weed and thin them. In October remove the pots into a common frame, where they may enjoy the free air in mild weather, but be screened from frost. The spring following, if the plants are carefully turned out of the pots, and planted in the full ground, they will flower in June, and the seeds will ripen in August.

[HASTINGIA. See *Abroma*.

HATCHET-VETCH. See *Coronilla*.

HAVER. See *Avena*.

HAWKWEED. See *Hieracium*.]

HAWTHORN. See *Cratægus*.

HAZEL-NUT-TREE. See *Corylus*.

[HEART'S-EASE. See *Viola*.

HEART-SEED. See *Cardiospermum*.

HEATH. See *Erica*.

—— Berried. See *Empetrum*.

—— Sea. See *Frankenia*.

HEBE Jussieu. See *Veronica decussata*.

HEBENSTREITIA. (So named by Linneus, in memory of Job. Ernst. Hebenstreit, Prof. of Medicine at Leipsic; he travelled into Africa, and published *Definitiones Plantarum* 1731.)

Lin. gen. n. 770. *Reich.* 831. *Schreb.* 1033.

Gærtn. t. 51. *Juss.* 110.

Class. 14. 2. Didynamia Angiospermia.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved; tubular, membranaceous, emarginate, gaping longitudinally underneath.

COR. monopetalous, one-lipped: tube cylindric, longer than the calyx, gaping on the lower side half way; border ascending, flattish, quadrid, the clefts nearly equal.

STAM. *Filaments* four; of which the upper pair is inserted into the edge of the corolla under the throat, and stands out, the lower anterior pair is bent back to the sides. *Antbers* crescent-shaped, compressed; truncate outwards.

PIST. *Germ* very small. *Style* filiform, flexuose, bent back through the fissure of the corolla. *Stigma* simple.

PER. *Capsule* oblong, one-celled, two-valved.

SEEDS two, oblong, convex on one side, three-furrowed, flat on the other.

ESSENTIAL CHARACTER.

Cal. emarginate, cleft underneath. Cor. one-lipped, lip ascending, four-cleft. Stam. inserted into the edge of the border of the corolla. Caps. containing two seeds.

SPECIES.

1. *Hebenstreitia dentata*. *Tooth-leaved Hebenstreitia*.
Lin. spec. 878. *fst.* 570. *Reich.* 3. 174. *hort.*
cliff. 497. 326. *Gærtn. fruct.* 238. *Berg. cap.*
153. *Burm. afr.* 109. *t.* 41. *f.* 1. *Comm. hort.*
2. 247. *t.* 109. (Valerianella). *Raii suppl.* 245.
(Valerianoides). *Burm. afr.* 114. *t.* 42. *f.* 2.
(Pedicularis).

Leaves linear toothed, spikes smooth.

2. *Hebenstreitia ciliata*.
Lin. fst. *Reich.* 3. 157. *mant.* 420. *Berg. cap.*
154. *Burm. afr.* 109. *t.* 41. *f.* 1. (Rapunculus).

Leaves linear, toothed, calyxes three-valved, ciliate.

3. *Hebenstreitia integrifolia*. *Entire-leaved Hebenstreitia*.
Lin. spec. 878. *fst.* 570. *Reich.* 3. 175. *hort. cliff.*
497.

Leaves linear, quite entire.

4. *Hebenstreitia cordata*. *Heart-leaved Hebenstreitia*.
Lin. fst. 570. *Reich.* 3. 175. *mant.* 420.

Leaves somewhat fleshy, cordate, sessile.

5. *Hebenstreitia Erinoides*.

Lin. fst. 570. *suppl.* 286.

Leaves oblong, serrate, hairy, bractes entire, hispid.

6. *Hebenstreitia fruticosa*. *Shrubby Hebenstreitia*.

Lin. fst. 570. *suppl.* 287.

Leaves lanceolate, toothed, smooth, bractes entire, stem shrubby.

DESCRIPTIONS, &c.

1. Stalk upright, a foot high, with simple ascending branches next the root, and under the spike. Leaves alternately scattered, somewhat hispid, upright, with copious

^b Linn. mant.

^c Gartner.

^d Hort. kew.

^e Linn. suppl.

^f Gartner.

^g Linn. suppl.

^h Hort. kew.

copious leaflets branching a little from each axil. Spike terminating, sessile, oblong, barren at bottom; with smooth bracts, awl-shaped, imbricate in ten longitudinal rows, one to each flower; for the spike is constructed of five-flowered whorls, but alternate. Corolla white, with a red throat; singular in having the stamens placed on the very edge of the fissure^a:—the lip widens outwards, and is three-lobed at the end, the middle lobe bifid, the side ones emarginate. Capsule ovate-acuminate, ending with the style, somewhat membranaceous, compressed like a lens. Seeds sub-elliptic, acuminate at the tip, slightly emarginate at the base, pale straw-colour, fixed to the bottom of the capsule without any receptacle^b.—The flowers in the morning are without scent, at noon they are stinking and nauseous, in the evening ambrosiac, like the Oriental Hyacinth^c.

Native of the Cape of Good Hope. Biennial. Flowers here from february to november. Introduced in 1770, by Monf. Richard^d.

2. 3. Both these bear a great resemblance to the foregoing; and the third seems only to be a variety of the second. They are both natives of the Cape.

4. An undershrub. Stem upright, whitish, smooth and even, sparingly branched only at top. Leaves alternate or opposite, sessile, or somewhat stem-clasping, blunt, scarcely crenate, gibbous underneath. Spike terminating, sessile. Corolla white, with a flesh-coloured throat. Anthers compressed, yellow, as in *H. dentata*^e.—Native of the Cape, and introduced in 1774, by Masson^f.

5. 6. Found at the Cape by Thunberg.]

HEDERA. (Ab edendo, quod arbores exedit: *because it wastes and devours trees.*—*A very doubtful etymology; but better than another, ab hærendo.*)

Engl. Ivy. Fr. *Lierre*.

Lin. gen. n. 283. Reich. 304. Schreb. 395. Tourn. t. 384. Gærtn. t. 26. Juss. 214.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Hederaceæ*.—*Caprifolia*, Juss.

GENERIC CHARACTER.

CAL. *Involucre* of a simple umbel, very small, many-toothed. *Perianth* very small, five-toothed, surrounding the germ.

COR. *Petals* five, oblong, spreading, with the tips bowed inwards.

STAM. *Filaments* five, subulate, upright, of the same length with the corolla. *Anthers* trifid at the base, incumbent.

PIST. *Germ* turbinate, surrounded by the receptacle. *Style* simple, very short. *Stigma* simple.

PER. *Berry* globular, one-celled (five-celled. G.)

SEEDS five, large, gibbous on one side, angular on the other.

ESSENTIAL CHARACTER.

Pet. five, oblong. *Berry* five-seeded, surrounded by the calyx.

SPECIES.

1. *Hedera Helix.* *Common Ivy.*

Lin. spec. 292. Reich. 1. 568. fl. lapp. n. 91. succ. n. 209. hort. cliff. 74. mat. med. 70. Gærtn. fruct. 130. Hudf. angl. 100. With. 245. Curt. lond. 1. 16. Hall. helv. n. 826. Scop. carn. n. 271. Pollich. pal. n. 237. Neck. gallob. 127. Krock. siles. n. 359. Blackw. t. 188. Plenck, ic. t. 150.

Hedera arborea. Baub. pin. 305. Park. theat. 678. 1.

H. communis major & minor. Baub. hist. 2. 111. 1. Raii syn. 459. hist. 1505.

H. corymbosa. Ger. 708. 1. emac. 857. 1.

β. *H. poetica.* Baub. pin. 305. Raii hist. 1505. *Leaves ovate, undivided.*

γ. *H. major sterilis.* Baub. pin. 305.

H. Helix. Ger. 708. 2. emac. 857. 2. Park. theat. 679. 4.

Leaves five-lobed.

δ. *H. humi repens.* Baub. pin. 305.

Leaves lanceolate.

Leaves ovate and lobed.

^a Linn. syst.

^b Gærtner.

^c Linn. syst.

^d Hort. kew.

^e Linn. mant.

^f Hort. kew.

[2. *Hedera capitata.* *Cluster-flowered Ivy.*

Smith. icon. rar. 1. t. 4.

Aralia capitata. Jacq. amer. 89. t. 61. Swartz. prodr. 55. Ait. hort. kew. 1. 382.

Leaves elliptical, entire; racemes compound, terminating; flowers sessile, in little heads.]

3. *Hedera quinquefolia.* *Five-leaved Ivy.*

Lin. spec. 292. syst. 243. hort. cliff. 74. Gron. virg.

24. Corn. canad. 99. t. 100. Duham. arb. 4.

Raii hist. 1699. Park. parad. 612. 22. t. 609. f. 7.

Helix. Mitch. gen. 30.

Leaves quinate, ovate, serrate.

[4. *Hedera pendula.*

Swartz. prodr. 51.

Leaves ovate-lanceolate, entire, peduncles very long, pendulous,

5. *Hedera nutans.*

Swartz. prodr. 51.

Leaves elliptic, coriaceous, umbels nodding, hemispherical.

6. *Hedera terebinthinacea.*

Vahl symb. 3. 42. Lin. zeyl. n. 624. Burm. zeyl. 28. (Itta).

Leaves in sevens, elliptic, quite entire.

DESCRIPTIONS, &c.

1. *Common Ivy* is a parasitical shrub.] Where it meets with any support, such as walls, buildings or trees, the stem will adhere to them, and rise to a very great height, insinuating itself by a great abundance of fibres into the joints of walls, or the bark of trees. If no support is near, the stalks trail upon the ground, taking root their whole length, so that they cover the surface closely, and are difficult to eradicate; for where any small parts of the stalks are left, they will soon spread and multiply. Whilst Ivy is fixed to any support, or trails upon the ground, the stalks are slender and flexible; but when it has reached to the top of its support, they shorten and become woody, forming themselves into large bushy heads; their leaves are larger, more of an oval shape, and not divided into lobes like the lower leaves: this difference occasioned the old botanists to take them for different species. Whilst the stalks trail, Ivy does not produce any flowers; and in this state it is called *Barren* or *Creeping Ivy*: but when the branches get above their support, they produce flowers at the end of every shoot; these are succeeded by berries, formed into round bunches called by the ancients *corymbi*, and turning black before they are ripe. [In this state it is called *Climbing* or *Berried Ivy*.—The trunk in old trees is covered with an ash-coloured chopped bark; in the young branches it is of a green or purple colour. Leaves alternate, evergreen, glossy, smooth, while the plant creeps, three-lobed or sometimes five-lobed; but when it quits its support, ovate: they are sometimes tinged with red, sometimes painted with white veins, particularly in the young branches. The petioles are long, and dilated at the base. The flowers are yellowish, or greenish white, in a very close, thick umbel, at the extremities of the twigs^a.—The berry is placed below the receptacle of the flower, and is crowned with the five-cornered, streaked rudiment of it; at first it is succulent, with a purple juice; afterwards it becomes coriaceous, dry, and very obscurely quinquangular. The five cells are invested by their proper silky-white membrane: the partitions are very thin, one or more frequently obliterated when the berry is in a state of maturity. The seeds are wrinkled and yellowish^b.

It is found wild all over Europe; but Linneus says it is by no means common in Sweden. Kalm remarks, that he never saw the common Ivy in North America, except once, against a stone building, and this was apparently brought from Europe, and planted there^c. Thunberg remarked it in Japan, and says that the leaves are commonly undivided there, and not lobed. It begins to flower with us in september. Being so late a bloomer, it is much resorted to by bees and flies, when little other food is to be had. The berries increase during the winter, are full formed in february, and ripen in

^a Curtis, Jussieu, Krock.

^b Gærtner.

^c Travels, 1. 141. Engl. edit.

april; furnishing food for wild pigeons, black-birds, thrushes, &c. in the spring. Black-birds and several other birds build their nests in the stump. Sheep are fond of Ivy; it is a warm and wholesome food for them in hard weather, the shepherds therefore in snowy seasons cut down branches for their flocks to browse on. Cato directs that in a scarcity of hay, cattle should be foddered with it. The ancients held Ivy in great esteem. It formed the poetical garland

"Inter viâtrices *hederas* tibi *serpere* lauros."

Bacchus is represented crowned with it to prevent intoxication: and Homer describes his heroes as drinking out of a cup made of the wood^d.

As a medicine it is scarcely admitted into modern practice. The leaves have a nauseous taste. Haller says they are given in Germany as a specific in the atrophy of children. Common people apply them to issues and corns. The berries have a little acidity. They purge and vomit^e. In Galicia they give the seeds bruised in pleurisy, to the quantity of two teaspoonfulls, every eight hours^f. In warm climates a resinous juice exudes from the stalks^g; or may be procured by wounding them. It is insipid and inodorous, inflames in burning, with a pleasant aromatic smell, and has then a slight astringency. It tinges spirit of wine of a reddish brown colour, and is said to be aperient, resolutive and balsamic: but it is not in use^h.

The wood is soft and porous, so as to transmit liquids, if turned of a sufficient degree of thinness. The roots are used by leather-cutters to whet their knives upon. The branches, being very full of leaves, are as effectual as any thing to protect the tender blossoms of apricots, peaches and nectarines, against the cold winds and frosts of february and marchⁱ.]

In the latter part of the last century, when it was the fashion to fill gardens with all sorts of sheered ever-greens, many of these plants were trained into round heads, clipped into globes, cones, &c.; and being so hardy as not to be injured by weather, and growing in any soil, were then much esteemed: since this taste has been exploded, the Ivy is seldom admitted into gardens, unless to cover walls, or run over ruins, &c. for which purposes no plant is so well adapted.

[Mr. Curtis, however, observes that few people are acquainted with the beauty of Ivy when suffered to run up a stake, and at length to form itself into a standard; the singular complication of its branches, and the vivid hue of its leaves, give it one of the first places amongst ever-greens in a shrubbery. In woods, when suffered to grow large and rampant, this plant, by twining round the bodies of timber trees, does them great damage, and therefore should be carefully destroyed, as it may easily be, by cutting any where through its trunk. But in ornamental outlets, where ever-greens do not abound, a few trees covered with Ivy have a very pleasing effect; and induce birds of song to haunt those thickets for the sake of the berries and shelter. Ivy also produces very picturesque effects in large masses of ruined buildings. Linneus affirms that it does no injury to buildings; but that can scarcely be admitted, when we consider that it must harbour wet and filth, and that the branches will make their way into any fissure or defect in the wall, and enlarge it.

Besides the varieties enumerated above, which arise merely from age and situation, there are two that may be found in the nurseries:] one with silver-striped leaves, and the other with yellowish leaves on the top of the branches.

2. Stem arborescent, eight feet high in the stove, erect, cylindrical, abruptly branched. Bark brown, a little cracked. Branches curved upwards, leafy, terminated by flowers. Leaves scattered, more crowded towards the tops of the branches, on foot-stalks, wide spreading, pointed, waved on the margin, very smooth, obscurely three-nerved, veiny, bright green. Foot-

stalks various in length, nearly cylindrical, smooth, firmly fixed to the branch by an enlarged triangular base. Buds consisting of several large, roundish, smooth, yellowish scales, soon falling off, which are often tipped with the rudiments of a leaf, and appear like abortive leaves. Racemes erect, branches generally alternate, ending in little round heads of many sessile flowers. Common foot-stalks obsoletely angular, pale green, sprinkled with rusty-coloured powder; partial ones cylindrical. Bractes solitary at the base of the latter, small, concave, pointed, entire, powdery. Flowers numerous, white, so small that the structure is not readily to be understood; each stands on its proper involucre, resembling a calyx of one leaf, in five divisions, externally powdery, permanent. Calyx pale green, smooth, permanent. Petals on the margin of the calyx, ovate, somewhat pointed, white, deciduous. Filaments opposite to the teeth of the calyx, and alternate with the petals, spreading, white. Anthers roundish, two-lobed, yellow. Germen below the flower, crowned with the calyx, roundish, smooth. Styles short erect, at first united into one body, then spontaneously splitting into several, varying in number from three to ten. Berry smooth, brown, with five or more cells, each probably containing one seed.

Jacquin, the first discoverer, long ago suspected that this species belonged to the genus *Hedera* or Ivy; but later authors have kept it in that of *Aralia*.

This fine plant was discovered in the woods of Martinico, by Professor Jacquin, and in Jamaica by Dr. William Wright and Mr. Francis Masson. (In the catalogue of the Royal garden at Kew, it is said to have been introduced in 1778, by Mr. William Forsyth, but) it existed in the collection of the late Marquis of Rockingham long before the year 1777. It flowered for the first time in Europe in the stove of the Marchioness in 1787^k.

3. Racemes trifid, twice dichotomous, finally umbelled. Calyx very short, bluntly toothed, red at the tip. Petals blunt, arched at the tip, green. Gland of the receptacle higher than the calyx, surrounding the germ with a few notches. Filaments filiform, a little longer than the corolla. Style of the same length with the filaments. Germ superior, containing four seeds. The number varies in the flower, being either four or five^l.]

It grows naturally in all the northern parts of America, was first brought to Europe from Canada, and has been chiefly employed to cover walls or high buildings, which this plant will do in a short time, for it will shoot almost twenty feet in one year; but as the leaves fall off in autumn, and are late before they come out in the spring, it is not much esteemed, unless where better things will not thrive; not being injured by smoke, or closeness of air, it is proper to cover buildings in great towns. The stalks put out fibres, like the common Ivy, which insinuate themselves into the joints of walls.

[From Parkinson it appears that it was cultivated here in 1629.

Jussieu is of opinion that it should be removed to the genus *Vitis* or Vine.

4. 5. Natives of Jamaica^m.

6. The whole is smooth. Branches round, subherbaceous, the thickness of a swan's quill. Leaflets petioled, umbelled, from three to four inches long, the side ones gradually less, somewhat veined, sometimes ending in a short point. Petioles a span long, round, embracing with the widened base; the middle petioles two inches long; the side ones shorter. Raceme terminating, on the side of the leafy branch, compound: general peduncle three inches long, the thickness of a swan's quill; the partial ones in fives, alternate, the two last conjugate, half a foot long, spreading. Calyx a very short entire rim. Petals six, linear. Stamens six, the length of the corolla. Style the length of the filaments. Native of Ceylonⁿ.]

^k Smith, ic. rar.

^l Schreber in Linn. syst.

^m Swartz.

ⁿ Vahl.

^d Curtis. ^e Withering. ^f Towns. Spain, I. 371.

^g Withering. ^h Krockner. ⁱ Withering.

PROPAGATION AND CULTURE.

The different species are easily propagated by their trailing branches, which send forth roots their whole length; or by cuttings, planted on a shady border in autumn, which by the following autumn will be fit to plant where they are designed to remain; or by seeds sown soon after they are ripe, which is in the beginning of April: if these be kept moist and shaded, they will grow the same spring, otherwise they will remain a year in the ground.

HEDERA TERRESTRIS. See *Glechoma*.

[HEDGE-HYSSOP. See *Gratiola*.

HEDGE-MUSTARD. See *Sisymbrium* & *Erysimum*.

HEDGE-NETTLE. See *Galeopsis*.]

HEDGES. Hedges are either planted to make fences round inclosures, or to part off and divide the several parts of a garden: when they are designed as outward fences, they are planted either with Hawthorn, Crabs, or Black-thorn, which is the Sloe; but those Hedges which are planted in gardens, either to surround wilderness quarters, or to screen the other parts of a garden from sight, are planted with various sorts of plants, according to the fancy of the owner; some preferring ever-green Hedges, in which case the Holly is best, next the Yew, then Laurel, Laurustinus, Phillyrea, &c. others, who make choice of the deciduous plants, prefer the Beach and Hornbeam, English Elm, or the Alder, to any other; I shall first treat of those Hedges which are planted for outside fences, and afterwards briefly touch on the other.

These Hedges are most commonly made of Quick, yet it will be proper, before planting, to consider the nature of the land, and what sorts of plants will thrive best in that soil, whether it be clay, gravel, sand, &c. likewise what the soil is from whence the plants are to be taken; for if the land they are taken from is much better than that in which they are to be planted, it will be more difficult to get them to grow. As for the size, the sets ought to be about the bigness of a goose quill, and cut within about four or five inches of the ground; they should be fresh taken up, straight, smooth, and well rooted. Those plants which are raised in the nursery, are to be preferred to all others, and if raised on a spot near the place, it will be best. The time for planting is February, March and April.

Secondly, if the Hedge has a ditch, it should be made six feet wide at top, and one foot and a half at bottom, and three feet deep, that each side may have a proper slope; for when the banks are made too upright, they are very subject to fall down after every frost or hard rain; besides, if the ditches are made narrower, they are soon choked up in autumn by the falling leaves, and the growth of weeds, nor are they a sufficient fence to the Hedge against cattle, where they are narrower.

Thirdly, if the bank be without a ditch, the sets should be set in two rows, almost perpendicular, at the distance of a foot from each other, in the quincunx order, so that in effect they will be but six inches asunder.

Fourthly, The turf is to be laid with the Grass side downwards, on that side of the ditch the bank is designed to be made, and some of the best mould should be laid upon it, to bed the Quick; then the Quick is to be planted upon it a foot asunder, so that the ends of the Quick may stand upright.

Fifthly, When the first row of Quick is planted, it must be covered with mould, and the turf laid upon it as before; so that when the bank is a foot high, you may plant another row of sets against the spaces of the lower Quick, and cover them as the former was done; and the bank is to be topped with the bottom of the ditch, and a dry, or dead Hedge laid on the other side, to defend the under plantation from the cattle.

In making of these dead Hedges, there should be stakes driven into the loose earth, at about two feet and a half distance, so low as to reach the firm ground.

Oak stakes are accounted the best, and Black-Thorn and Sallow the next; then let the small bushes be laid at bottom, but not too thick, for that will cause the bushes to rot; but the upper part of the Hedge

should be laid with long bushes to bind the stakes in with, by interweaving them.

And, in order to render the Hedge yet stronger, you may edder it, as it is called, i. e. bind the top of the stakes in with some small long poles, or sticks on each side; and when the eddering is finished, drive the stakes anew, because the waving of the Hedge and eddering is apt to loosen the stakes.

The Quick must be constantly kept weeded, and secured from being cropped by the cattle, and in February it will be proper to cut it within an inch of the ground, if it was not done before; which will cause it to shoot strong, and help it much in the growth.

When a Hedge is of about eight or nine years growth, it will be proper to plash it; the best time for this work is either in October or February.

When a Hedge is grown old, i. e. of about twenty or thirty years growth, and there are in it old stubs as well as new shoots, the old stubs should be cut sloping off within two or three inches of the ground, and the best and longest of the middle size should be left to lay down; and some of the strongest, at the height of five or six feet, according as you design the height of the Hedge to be, may be left to serve instead of stakes, and fresh stakes should be put in those places where they are wanting; the Hedge should be then thinned, so as to leave on the stubs only such shoots as are designed to be of use, that there may be room left to put a spade in between them; the ditch also should be cleansed, and each side of the slopes kept as in a new ditch; and where the earth is washed from the roots of the Quick, or is hollow, face it anew with so much of the first spit of earth that is dug out of the ditch, as there is occasion for, and lay what is dug out at the second spit, on the top of the bank; for if it be laid on the side, or face of the bank, it will slip into the ditch again when wet comes, and also take a great deal of the bank along with it.

In plashing Quicks, there are two extremes to be avoided; the first is, laying it too low and too thick; because it makes the sap run all into the shoots, and leaves the plashes without nourishment, which, with the thickness of the Hedge, kills them.

Secondly, It must not be laid too high, because this draws all the sap into the plashes, and so causes but small shoots at the bottom, and makes the Hedge so thin, that it will neither hinder the cattle from going through, nor from cropping of it.

When the shoot that is designed to be plashed is bent, give it a small cut with a bill, half through, sloping a little downwards, and then weave it about the stakes; and when the whole is finished, trim off the small superfluous branches that straggle too far out on both sides of the Hedge.

If the stubs are very old, cut them quite down, and secure them with good dead Hedges on both sides, till the young shoots are got up tall enough to plash, and plant new sets in the void spaces.

In making a Hedge, if it be set with Crab Stocks, it will be proper to leave one standing uncut up at every thirty or forty feet, if the ground on both sides of the Hedge be your own; which being done, they may be so ordered, by pruning or staking, that one may lean into one ground, and the other into another, &c.

These stocks should be pruned up every year, till they are brought out of the reach of the cattle, and then they may be grafted with the Red Streak, Genet-moil, or what other kind of cyder Apple you please.

If the stocks be of Apple kernels, they may stand ungrafted, for many of them will yield very good cyder fruit; but then such stocks as are not grafted, will be longer before they bear; and also when you do graft, you may be certain of your kind; but if you find a very natural stock, which by leaf, shoot, and bud, appears likely, you may try it, and so you may have a new fine fruit; and if you do not like it, you may graft it when you please.

As for the rest of the Hedge, when it has shot four or five years, you may lay it to make a fence; for the doing of which, take the following directions:

First,

First, At every laying to lay down some old plashe; or, if the Hedge be thin, young ones; but they must be so laid, as to point with their ends to the ditch side of the bank, the ends being kept low on the bank; by being so ordered, they will the better thicken the bottom of the Hedge, and keep up the earth of the bank.

Secondly, To heighten the bank every time you lay earth on it, so as to cover the layers, all but the ends, this earth will very much help the Quick; and by heightening the banks, and deepening the ditch, you will render the fence the better.

Thirdly, Not to cut the plashe too much, but just so as they may bend down well; not to lay them too upright, as some do, but to lay them near to a level; for by so doing, the sap will the better break out at several places, and not run so much to the ends, as it will when they lie too much upon the slope.

If you have much wood to spare, you may cut up great part of those that grow near the ditch, but then you ought to hang the bank with bushes, to prevent cattle from cropping them the first year; these will shoot strong, secure the Hedge, keep up the bank, and thicken the bottom of the Hedge.

Fourthly, Take care to lay the Hedge pretty thick, and turn the beard on the ditch side; but you must not let the beard hang uncut, though it makes a good shew at the first making, but you must cut off all the straggling boughs within half a foot of the Hedge on both sides, which will cause it to shoot strong at these places, and make the Hedge much the thicker.

Fifthly, If the bank be high, make the Hedge so low, that it may just serve for a fence the first year, for it will soon grow higher; and the lower the Hedge is made, the faster the Quick will grow, and also will be the thicker at the bottom; but care must be taken to preserve it from cattle on the field side for the two first years that it is made.

Sixthly, If you would have a good Hedge, or fence, you should new lay it once in fourteen or fifteen years, and constantly root out Elder, Traveller's Joy (which some call Bull-bine), Briony, &c. and do not leave too many high standards, or pollards in it, though the Elm is one of the best; also no dead wood is to be left in the bottom of the Hedges, for that will choke the Quick; but if there be a gap, the dead Hedge should be made at a distance.

The Crab is also frequently planted for Hedges, and if the plants are raised from the kernels of the small wild Crab, they are much to be preferred to those which are raised from kernels of all sorts of Apples without distinction; because the plants of the true small Crab never shoot so strong as those of the Apples, so may be better kept within the proper compass of a Hedge; and as they have generally more thorns upon them, they are better guarded against cattle, &c. than the other; besides, the plants of the Crab will grow more equal than those which are raised from the kernels of various kinds of Apples, for these always produce a variety of plants, which differ from each other in their manner of growth, as much as in the size and flavour of their fruits; so that Hedges made of these will not appear so well, nor can be so well managed as the other.

Some persons intermix Crab with the White Thorn in their Hedges, but this is not a good method; for the plants of the Crab will grow much stronger than those of the White Thorn, so that the Hedge will not be of equal growth; which is not near so beautiful or useful, as when the plants of a Hedge keep pace in their growth.

The Black Thorn, or Sloe, is also frequently planted for Hedges, and is a strong durable plant for that purpose, especially as it is so strongly armed with thorns, that cattle seldom care to browse upon it; but where this is planted, the best way is to raise the plants from the stones of the fruit; for all those which are taken from the roots of old trees, spawn, and put out suckers in such plenty from their roots, as to spread over, and fill the neighbouring ground to a considerable distance on each side of the Hedge; and this plenty of suckers drawing away the nourishment from the old plants of

the Hedge, they never grow so well as where there are few or no suckers produced; which those plants which are propagated from the stones send not forth; or at least but sparingly, therefore may with little trouble be kept clear of them. The best method of raising these Hedges is, to sow the stones in the place where the Hedge is intended, where it can be conveniently done, for then the plants will make a much greater progress than those which are transplanted; but the objection to this method will arise from the difficulty of securing the young plants from the cattle; but this can have little force, when it must be considered that if the Hedge is planted, it must be fenced for some years, to prevent the cattle from destroying it; therefore the same fence will do for it when sown, nor will this require a fence much longer than the other. For the plants which stand unremoved, will make a better fence in seven years than that which is planted, though the plants should be of three or four years growth when planted; which is what I have seen two or three times, where the experiment has been tried. The stones of this fruit should be sown early in January, if the weather will permit; but when they are kept out of the ground longer, it will be proper to mix them with sand, and keep them in a cool place. The bushes of the Black Thorn are by much the best of any for making of dead Hedges, being of longer duration, and having many thorns; neither the cattle nor the Hedge-breakers will care to meddle with them; these bushes are also the best to be used for under ground drains, for the draining of land, for they will remain sound a long time when the air is excluded from them.

The Holly is sometimes planted for Hedges, and is a very durable strong fence; but where it is exposed, there will be great difficulty to prevent its being destroyed, otherwise it is by far the most beautiful plant, and being an Evergreen, will afford much better shelter to cattle in winter, than any other sort of Hedge; and the leaves being armed with thorns, the cattle will not care to browse upon it. Another objection to this plant is the slow growth, so that Hedges planted with this plant, require to be fenced a much longer time than most others. This is a reason which must be admitted, to prevent this being generally practised; but in such grounds as lie contiguous to, or in sight of gentlemen's houses, these sort of Hedges will have an exceeding good effect, especially when they are well kept, as they will appear beautiful at all seasons of the year; and in the spring of the year, when the sharp winds render it unpleasant to walk abroad in exposed places, these Hedges will afford good shelter, as they will effectually keep off the cold winds, if they are kept close and thick. The surest method of raising these Hedges is, by sowing the berries in the place where they are to stand; but these berries should be buried in the ground one year before they are sown, by which method they will be prepared to grow the following spring. The way of doing this is, to gather the berries about Christmas, which is the time they are usually ripe, and put them into large flower-pots, mixing some sand with them; then dig holes in the ground, into which the pots must be sunk, covering them over with earth about ten inches thick; in this place they may remain till the following October, when they should be taken up, and sown in the place where the Hedge is intended. The ground for this Hedge should be well trenched, and cleared from the roots of all bad weeds, bushes, trees, &c. Then two drills should be made at about a foot distance from each other, and about two inches deep, into which the seeds should be scattered pretty close, lest some should fail; for it is better to have too many plants come up, than to want. The reason of my advising two drills is, that the Hedge may be thick to the bottom, which in a single row rarely happens, especially if there is not great care taken of them in the beginning. When the plants come up, they must be carefully weeded; for if the weeds are permitted to grow among them, they will soon destroy them, or weaken them so much, that they will not recover their strength in a long time. This should be constantly observed by every person who

who is desirous to have good Hedges of either sort; for when the weeds are suffered to grow near the plants, they will not only rob them of a great part of their nourishment, but also prevent their putting out shoots near the ground, which will occasion the bottom of the Hedge to be thin and naked.

When these Holly Hedges are designed to be kept very neat, they should be sheered twice a year, in may and august; but if they are only designed as fences, they need not be sheered oftener than once a year, which should be about the latter end of june, or the beginning of july; and if this is well performed, the Hedges may be kept very beautiful.

The fences which are made to secure these Hedges from cattle while they are young, should be contrived so as to admit as much free air as possible, which is absolutely necessary for the growth of the plants; for when they are crowded on each side with dead Hedges, the plants seldom thrive well. The best sort of fences for this purpose, are those which are made with posts and rails; or instead of rails, three ropes drawn from post to post, and holes made in the posts to draw the ropes through; this is the cheapest fence of this kind, and will appear very handsome; but if sheep are not admitted into the fields, there will be occasion for two ropes only, which will be enough to keep off larger cattle; and if the ropes are painted over with a composition of melted pitch, brown Spanish colour, and oil, mixed well together, they will last sound several years; and these sort of fences never obstruct the air, and the place, at the same time being open to view, the weeds will be better discovered than when the fences are close. In the latter case, the Hedges are sometimes suffered to be over-run with weeds, by their being excluded from the sight, so are frequently forgotten, especially in moist weather, when the weeds grow more luxuriant.

There are some persons who intermix Holly with the White Thorn in making their Hedges, which if rightly managed, will have a good effect, especially when young; but when this is practised, the Holly should be planted so near, as that the Hedge may be entirely formed of it as it grows up, when the White Thorn should be quite rooted out; for as these advance, they will not keep pace in their growth, so will not appear beautiful when intermixed.

When a Hedge of Holly is intended to be made by plants, the ground should be well trenched, as was before advised for the seeds; and unless the ground be very wet, the plants should be set in october; but in wet ground, march is preferable. The plants should not be taken from a better soil than that in which they are to be planted; for when it so happens, the plants are much longer before they recover this change, than those are which are taken from a leaner soil. If the plants have been before removed two or three times, they will have better roots, and will be in less danger of miscarrying; besides, they may be removed with balls of earth to their roots. When the frost comes on, if mulch be laid upon the ground near the roots of the plants, it will prevent the tender fibres, which may then have been put out, from being destroyed by the cold. I would never advise the planting of Hedges with Holly plants, of above five or six years growth from the berries; for when the plants are older, if they take to grow, they are longer before they form a good Hedge, than plants which are much younger; and if the plants have been twice before transplanted, they will more certainly grow.

I shall next treat of Hedges for ornaments in gardens: these are sometimes planted with Evergreens, especially if they are not intended to grow very high; in which case, they are planted with deciduous trees. Evergreen Hedges are planted with Holly, Yew, Laurel, Laurustinus, Phillyrea, Alaternus, evergreen Oak, and some others of less note. The Holly is preferable to any other, for the reasons before given. Next to this, most people prefer the Yew, on account of its growing very close; for when these Hedges are well kept, they will be so thick as that a bird cannot get through them; but the dead colour of the Yew, renders these Hedges less agreeable. The Laurel is one

of the most beautiful greens of any of the evergreen trees, but then it shoots so luxuriant, as to render it difficult to keep the Hedges which are planted with it, in tolerable shape; besides, the leaves being very large, if the Hedge is clipped with sheers, the leaves will be cut through, which gives them a bad appearance; therefore where there are Hedges of this kind, it will be the best way to prune them with a knife, cutting the shoots just down to a leaf. And although by this method the Hedge cannot be rendered so even as when cut with sheers, yet it will have a much better appearance than that of most of the leaves being cut through and stubbed, in the manner they must be when sheered.

The Laurustinus is also a very fine plant for this purpose, but the same objection is to be made to this as hath been to the Laurel; and as one of the great beauties of this plant is in its flowers, which are produced in the winter and spring, so when these are sheered, the flowers are generally cut off, by which their beauty is lost. Nor can this be avoided, where the Hedge is to be kept in close order, therefore this plant is not so proper for the purpose; but in such places where walls or other fences are designed to be hid, there is not any plant better adapted than this, provided it is rightly managed; for the branches of this plant are slender and pliable, so may be trained up close to the fence, whereby it may be entirely covered; and if, instead of clipping these with sheers, they are pruned with a knife, they may be so managed, as to have them full of flowers from the ground upward. This may be effected by pruning them in april, when the flowers are going off, cutting out those shoots that have flowered, or project too far from the fence; always cutting close to the leaf, that no stubs may be left: but those new shoots of the same spring must by no means be shortened, because the flowers are always produced at the extremity of the shoots of the same year; therefore when these are topped, as they must be by sheering, there can be few or no flowers upon these plants, except toward the top, where the sheers have not passed. By this method of knife pruning, the leaves will also be preserved entire, and the Hedge may always be kept enough within compass; and so thick, as fully to answer the purpose of covering the fence; and by the shoots growing a little irregular, it will make a much better appearance than any thorn Hedge whatever.

The small leaved and the rough leaved Laurustinus are the best sorts for this purpose, because their branches grow closer together than those of the shining leaved; they are also more hardy, and flower much better than the other, when growing in the open air.

The true Phillyrea is the next best plant for Hedges; it is by the gardeners called the True Phillyrea, to distinguish it from the Alaternus, which they simply call the Phillyrea. The branches of this are strong, the leaves pretty large, and of a strong green colour. And as this is a plant of middling growth, the Hedges planted with this may be led up to the height of ten or twelve feet; and if these Hedges are kept narrow at the top, that there may not be too much width for the snow to lodge upon them, they may be rendered very close and thick, and being a very good green, will make a fine appearance.

The Alaternus was formerly much more cultivated in the English gardens than at present. This was often planted to form Hedges, but the branches of this plant are too pliant for this purpose, being frequently displaced by strong winds, which render these Hedges unsightly; they also shoot very irregular and thin, so that the middle of the Hedge is frequently open and wide, and only the sides of them can be kept tolerably close, and that must be by often clipping them. If we add to this, their being frequently laid or broken down by snow in the winter, it must be deemed an improper plant for this purpose.

The Ilex, or evergreen Oak, is also planted for Hedges, and where these are designed to grow pretty tall, it is a fit plant for the purpose; because it is a plant of large growth, especially the sort which is most common in England; for there are two sorts of them which

which grow in the south of France and Italy, that are of much humbler growth, so are better adapted to this purpose, especially where the Hedge is not intended to be high, but these are not at present common here. When these Hedges are planted very young, and kept close trained from the beginning, they may be very close from the ground to the height of twenty feet or more; but these must always be kept narrower at the top than below, that there may not too much snow lodge upon them in the winter, which is apt to break and displace the branches, whereby the Hedges will be rendered unsightly.

There are also some persons who have planted the *Pyracantha*, or evergreen Thorn, Juniper, Box, Cedar of Virginia, Bay, &c. as also the *Halimys*, or Sea Purslane, and the Furz, Rosemary, and several other plants for Hedges; but the five sorts first mentioned having very pliant branches, which will require to be supported, and the three last being often destroyed by severe frost, renders them unfit for this purpose; nor are there other sorts of evergreen plants in the English gardens, which are so well adapted for Hedges, as those before-mentioned.

The deciduous trees, which are usually planted to form Hedges in gardens, are the following sorts.

The Hornbeam is much esteemed for this purpose, especially in such places where they are not required to be very high, or not wanted to grow very fast; for this plant, while young, doth not make so great progress as many others; but as it is of slower growth, the Hedges may be kept neat with less trouble than most other plants will require; and the branches naturally growing very close, they will make one of the closest Hedges of all the deciduous trees; but as the leaves of this tree continue upon the branches all the winter, and until the buds in the spring force them off, they have a bad appearance during the winter season.

[In Westphalia and other parts of Germany the Hornbeam is in great repute for Hedges. The German husbandman throws up a parapet of earth, with a ditch on each side, and plants his sets, raised from layers, in such a manner, as that every two plants intersect each other; there he scrapes off the bark, and binds them close together with straw. The plants consolidate, and form a living palisado, which being pruned annually with discretion, will in a few years make an impenetrable fence. It is not uncommon in Germany to see the sides of high roads thus guarded for many miles together. The Hornbeam is not delicate in point of soil; will put out strong lateral shoots within three inches of the ground; and is of quick growth*.]

The Beech is also a very proper tree for this purpose, having the same good qualities as the Hornbeam; but the leaves of this continue late in winter upon the branches, when they will have a bad appearance; besides, the litter which is occasioned by their leaves gradually falling most part of the winter, prevents the garden from being made clean a great while longer than if there are none of these trees planted.

The small-leaved English Elm, is also a proper tree for tall Hedges; if these are planted young, and kept closely clipped from their first setting out, the Hedges may be trained up to the height of thirty or forty feet, and be very close and thick the whole height. But when these trees are planted for this purpose, they should not be crowded so close together as they usually are by most people; by which method, when the trees have stood some years, if they have thriven well, their stems will approach so near each other, as that few branches can be maintained below, whereby the bottom of the Hedge will be naked; therefore they should not be planted closer together than seven or eight feet, or if they are ten feet it will be still better. And although at this distance they will not form a close Hedge so soon as when the trees are planted closer together, yet they will in a few years recompense for that, by their growing much closer and better from the ground upward.

* Hunter's Evelyn.

The Dutch Elm was formerly in great esteem for Hedges, being quick of growth, and thriving in such soils as the English Elm would not grow; but the wretched appearance which these Hedges made, after they had been growing a few years, very justly occasioned their being almost universally rooted out of gardens, for a more abominable plant was never introduced into gardens than this.

The Lime-tree hath also been recommended for Hedges, and in some of the old gardens there were many planted with this tree, which, for a few years after planting, made a tolerable appearance, especially when they grow upon a moist soil; but after they had stood some years, they grew very thin at bottom, and by being sheered at the top, they were rendered very stubby and unsightly, their leaves growing very thinly upon the branches, and these frequently turning of a black disagreeable colour, and falling off very soon in the autumn, and sometimes in the summer in dry seasons, has brought these trees so much into disrepute, as that few persons make use of them at present for this purpose: nor should any of the very strong shooting trees be applied to this use; for the more they are cut, the stronger they will shoot, and of course will appear very unsightly; besides, the often cutting of these Hedges occasions great trouble and expense, and frequent litters in gardens.

The Alder is frequently planted for Hedges, and where the soil is moist, there is not any of the deciduous trees equal to it for this purpose; for the leaves are of a lively green, continuing fresh till late in the autumn; and when they decay, their litter is soon over, for they all drop in a short time.

There are, besides the trees before-mentioned, many of the flowering shrubs which have been planted to form Hedges; such as Roses, Honeyuckles, Sweetbriar, &c. but these make a bad appearance, being more difficult to train; and if they are cut to keep them within compass, their flowers, which are their greatest beauty, will be entirely destroyed. But as these are but of low growth, they are not proper to plant where the Hedges are to be of any height.

Although I have given these full directions for planting and ordering of these Hedges for the pleasure-garden, yet I am far from recommending them as ornamental or useful. But as there are numbers of persons who may differ from me in their opinion, and therefore might think it a deficiency in my book, had I not given these instructions; to avoid their reproach, I have inserted as much as I think will be necessary for the obtaining these Hedges wherever they are desired, and at a less expense than the late method of planting them hath been generally attended with; where it is not uncommon to see four times the number of trees planted in these Hedges as would have been necessary, or that can remain long close together with any beauty. But most people who plant, are in too great a hurry to have their garden filled; and therefore frequently plant so close, as that in three or four years (if their trees thrive) three-fourths of them will require to be taken away again, to make room for those which are left to grow; and there are not wanting persons, who are ready enough to encourage this practice, since their own interest is thereby promoted.

The taste in gardening having been greatly altered of late years for the better, these clipped Hedges have been almost excluded; and it is to be hoped, that a little time will entirely banish them out of the English gardens, as it has already been done by the shorn Evergreens, which, a few years since, were esteemed the greatest beauties of gardens. The latter was introduced by the Dutch gardeners, and that of tall Hedges with treillage-work, was in imitation of the French gardens, in some of which, the expense of the iron treillage, to support the trees which compose their cabinets, pavillions, bowers, porticoes, and other pieces of rural architecture, amounted to a very great sum. I have been informed this work, in one garden, has cost above twenty thousand crowns; and this only to train up trees in the distorted shape of pilasters, niches, cornices, pediments, &c. when at the

same time, these can no longer retain the forms intended, than they are kept closely shorn into them; for no sooner do the trees begin to make fresh shoots, but the whole frame is altered; and instead of carrying the fine finished appearance of a regular piece of architecture, it is grown into a rude unpolished form. This expensive sort of work never has made much progress in England, but that part of the French taste, in surrounding all the several divisions of gardens with tall clipped Hedges, making great alleys, forming the walks into stars, and the like stiff performances, once too much obtained in England: and the taller these clipped Hedges were, the more they were admired; though many times they shut out from the view the sight of some of the noblest Oaks, and other timber trees, growing in the quarters, which are infinitely more pleasing to a person of true taste, than all the ridiculous forms it is possible for trees to be framed in by art. Besides, when the expense of keeping these Hedges, together with the great litter they occasion when clipped, is considered, these, added to many other reasons which might be given, are sufficient to exclude them out of gardens; where they can never be esteemed necessary, but to shut out from the view the sight of worse objects.

[HEDWIGIA. (So named from Joh. Hedwig, M. D. the famous author of *Historia Naturalis Muscorum Frondosorum*, 1782 qu. and 1787 fol.)
Lin. gen. Schreb. n. 1747. p. 800. Swartz prodr. 62.

Class. 8. 1. Octandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, cup-shaped, four-toothed: *teeth* minute, ovate, sharp, upright.

COR. monopetalous, tubulous: *tube* the length of the calyx, narrower at top: *border* quadrifid; the clefts ovate, sharp, upright, converging.

STAM. *Filaments* eight, broad, inserted into the base of the corolla, incumbent on the germ. *Anthems* minute, oblong, sharp, converging above the stigma.

PIST. *Germ* conical, eight-streaked, superior. *Style* none. *Stigma* blunt.

PER. *Capsule* tricoccus (composed as it were of three ovate acuminate capsules) large, three-celled.

SEEDS. *Nuts* solitary, ovate, acuminate, one side convex and very smooth, the other wrinkled and unequal. *Kernels* the shape of the nuts.

ESSENTIAL CHARACTER.

Cal. four-toothed. *Cor.* four-cleft. *Style* none. *Caps.* tricoccus. *Seed* a nut.

SPECIES.

1. *Hedwigia balsamifera*.

Swartz prodr. 62.

Bois Cochon. Nichols. hist. Doming. 169.

DESCRIPTION, &c.

This is a lofty tree, growing to the height of more than sixty feet, with a trunk four or five feet in circumference: outer bark gray and even; inner red, thick and gummy: wood solid, and reddish. Leaves oval, ending in a lengthened point at top, without any indentations, thin, shining, waved, yellowish green, five or six inches long, and three inches wide, ranged in pairs along a midrib, terminated by an odd one. The flowers grow in a raceme at the extremities of the branchlets, and are white. The fruit is the size of a small nut, divided into two or three parts, covered with a green coriaceous rind, and containing a white, fleshy, sweet pulp, having an aromatic smell: each division has in it a flattened woody shell, inclosing a bitter oily kernel.—Native of St. Domingo.

The wood is used as timber for various purposes. An aromatic oil is drawn from the kernels, which is much esteemed in disorders of the breast. The red gum that issues from the bark has a strong aromatic smell, and is much used in the cure of wounds. It is a notion that the wild swine first discovered this use of it, and hence it has the name of Bois Cochon^a.

HEDYCARIA. (From *hdus* sweet, and *καρυα* a nut.)

Lin. gen. Schreb. n. 1547. suppl. 67. Forst. gen. 64. Juss. 401.

^a Nicholson.

Class. 22. 11. Dioecia Icosandria.

Nat. order of *Scabridae*.—*Urtica*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, flat-wheel-shaped, eight or ten-cleft: *clefts* lanceolate, nearly equal. In the female permanent.

COR. none.

Male.

STAM. *Filaments* none. *Anthems* very many (fifty) oblong, four-furrowed, bearded at the tip, distributed along the whole bottom of the calyx.

Female.

PIST. *Germ*s numerous, flattened-globular, placed each on a cylindric pedicel in the middle of the calyx. *Styles* none. *Stigmas*, papillæ scattered over the germs.

PER. none.

SEEDS. *Nuts* six or ten, pedicelled, globular, somewhat bony. *Kernels* solitary, globular.

REC. in the middle of the calyx, woolly.

ESSENTIAL CHARACTER.

Cal. eight or ten-cleft. *Cor.* none.

MALE. *Filam.* none. *Anthems* in the bottom of the calyx, four-furrowed, bearded at the tip.

FEM. *Germ*s pedicelled. *Nuts* pedicelled, one-seeded.

SPECIES.

1. *Hedycarya dentata*.

Lin. syst. 894. suppl. 431. Forst. gen. n. 64. fl. austral. n. 379.

DESCRIPTION, &c.

A smooth shrub. Leaves alternate, oblong, serrate, on short petioles, very smooth, veined; the veins almost transverse. Racemes axillary. Calyxes hirsute. Nuts very sweet^b.

Native of New Zealand^c.

HEDYCREA. (From *hdus* sweet, and *κρεας*, flesh; the pulp of the fruit being sweet.)

Lin. gen. Schreb. n. 409. Licania. Aublet. 45.

Class. 5. 1. Pentandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, hemispherical, five-toothed: *teeth* sharp, patulous.

COR. none.

STAM. *Filaments* five, inserted into a ring, surrounding the calyx within, below the teeth, opposite to and shorter than they. *Anthems* roundish.

PIST. *Germ* roundish, villose, superior. *Style* longer than the calyx, bristle-shaped, villose. *Stigma* blunt.

PER. *Drupe* oval, soft, fibrous within, one-celled.

SEED. *Nut* ovate, covered with fibres, one-celled: the shell hard.

ESSENTIAL CHARACTER.

Cal. one-leaved, hemispherical, five-toothed. *Cor.* none.

Drupe oval, one-celled. *Nut* ovate, covered with fibres, one-celled; the shell hard.

SPECIES.

1. *Hedycra incana*.

Gmel. syst. 428.

Licania incana. Aubl. guian. 119. t. 45.

DESCRIPTION, &c.

This tree grows only to the height of three or four feet, with a trunk five or six inches in diameter. The bark is ash-coloured, very thin, falling in large pieces, and renewing itself every year. The wood is hard, whitish, and when sawed has the smell of rancid oil. The extremities of the branches and twigs have oval leaves, ending in a point, smooth and green on the upper surface, covered with a very white down underneath, and placed alternately; their petiole is short, accompanied at the base by two opposite stipules. The flowers grow in a spike at the ends of the branches and twigs: they are white, close and sessile. The fruit is the size of a large olive, white dotted on the outside with red; the pulp is white, melting, and of a sweetish taste; the shell or nut is bony, and separates with difficulty from the fibres in the pulp: the kernel is two-lobed.

Native of Guiana, where it is called *Caligni* by the natives, who are very fond of the fruit, which is ripe in october and november^d.

^b Linn. suppl.

^c Forster.

^d Aublet.

HEDYOSMUM. (*Ἠδυόσμος* of *Dioscorides*. From *ἡδύς*, and *οσμή* smell.)

Lin. gen. Schreb. n. 1453. Swartz prodr. 84.
Class. 21. 7. Monoecia Polyandria.

GENERIC CHARACTER.

Male flowers.

CAL. Ament without scales, covered on every side with stamens. *Perianth* none.

COR. none.

STAM. Filaments none. Anthers very many, imbricately heaped together, upright, oblong, acuminate at the tip, converging at the base into an oblong ament, and placed on a linear receptacle.

Females solitary on the same tree.

CAL. *Perianth* one-leafed, covering the germ, three-toothed at the tip: teeth minute, upright.

COR. none.

PIST. Germ oblong, three-cornered. Style very short, three-cornered. Stigma simple, obtuse.

PER. Berry roundish, three-cornered, small, superior.

SEED single, hard, three-sided, shining.

ESSENTIAL CHARACTER.

MALE. Ament covered with anthers—No perianth, corolla, or filaments.

FEM. Cal. three-toothed. Cor. none. Style one, three-cornered. Berry three-cornered, one-seeded.

SPECIES.

1. *Hedyosmum nutans.*

Swartz prodr. 84.

Stem shrubby, branches loose, leaves lanceolate acuminate.

2. *Hedyosmum arborescens.*

Swartz prodr. 84.

Stem arboresecent, branches stiff, upright, leaves ovate-lanceolate.

Natives of Jamaica.]

HEDYOSMUS. See *Cunila*.

HEDYOTIS. (*From ἡδύς sweet, and οὖς, ὠς an ear. Supposed to be a specific in deafness.*)

Lin. gen. n. 1118. Reich. 124. Schreb. 153.

Gartn. t. 30. Juss. 198.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of Stellatae.—Rubiaceae, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, four-parted, superior, permanent: parts linear, sharp.

COR. monopetalous, funnel-shaped, a little longer than the calyx, half-four-cleft: clefts patulous, nearly equal.

STAM. Filaments four, subulate, inserted at the sinuses of the corolla. Anthers roundish.

PIST. Germ roundish, inferior. Style filiform, the length of the stamens. Stigmas two, thickish.

PER. Capsule twin-globular, two-celled, gaping next the coronal calyx with a transverse cleft.

SEEDS few, angular (very numerous in *H. herbacea*, G.)

ESSENTIAL CHARACTER.

Cor. monopetalous, funnel-shaped. Caps. two-celled, many-seeded, inferior.

SPECIES.

1. *Hedyotis maritima.*

Lin. syst. 147. suppl. 119.

Leaves oval blunt, flowers opposite sessile.

2. *Hedyotis pumila.*

Lin. syst. 147. suppl. 119.

Leaves ovate sharp, flowers alternate peduncled.

3. *Hedyotis fruticosa.*

Lin. spec. 147. Reich. 1. 289. fl. zeyl. n. 63.

aman. 1. 392. Retz. obs. 2. n. 5? Burm. zeyl.

227. t. 107. (Valerianella).

Leaves lanceolate petioled, corymbs terminating involucre.

4. *Hedyotis Auricularia. Earwort.*

Lin. spec. 147. Reich. 1. 289. fl. zeyl. n. 64. mat.

med. 49. aman. 1. 391. Burm. zeyl. 227. t. 108.

f. 1. (Valerianella). Rheed. mal. 10. 63. t. 32.

Raii dendr. 134. Dale pharmac. 160. (Auricularia).

Leaves lanceolate-ovate, flowers in whorls.

5. *Hedyotis herbacea.*

Lin. spec. 147. Reich. 1. 290. fl. zeyl. n. 65. Gartn.

fruct. 1. 148. Loureiro fl. Cochinchin. 1. 77.

Oldenlandia tenuifolia. Gmel. syst. 263.

Leaves linear-lanceolate, stem herbaceous dichotomous, peduncles in pairs.

6. *Hedyotis graminifolia.*

Lin. syst. 147. suppl. 119. Vahl symb. 2. 27.

Oldenlandia stricta. Lin. syst. 162.

Leaves linear, stem decumbent, panicle racemed with the flowers directed one way, peduncles following the sun.

7. *Hedyotis hispida.*

Retz. obs. 4. n. 67.

Leaves linear-lanceolate, flowers in whorls.

8. *Hedyotis rupestris.*

Swartz prodr. 29.

H. americana. Jacqu. amer. 20.

Thymelæa, &c. Sloan. jam. 2. 94. t. 202. f. 1.

Leaves four-faced awl-shaped channelled, flowers sessile axillary, corollas villose with a crooked tube.

DESCRIPTIONS, &c.

1. Stems herbaceous, prostrate, a hand in length, smooth and even. Leaves opposite, on short petioles, spreading, somewhat fleshy. Flowers lateral. Fruit the size of Coriander.—Native of the East Indies. Koenig.

2. This has the appearance of *Anagallis arvensis*. Root annual. Stems little branched, a hand in length, smooth and even. Leaves like those of *Anagallis*, sharp at both ends, scarcely petioled, smooth and even. Peduncles lateral, solitary, capillary, upright, the length of the leaves. Capsule roundish, with a groove on each side, crowned with the four teeth of the calyx.—Native of Tranquebar. Koenig^a.

3. This has the appearance of *Phyllitis*. Stem four-cornered. Leaves opposite, smooth, nerved, quite entire. Stipules ovate-rhomboid, broad, short. Corymbs brachiate, or trifid. Calyx four-cleft. Filaments a little longer than the corolla: anthers oblong. Style bifid, blunt.—Native of Ceylon^b.

Retz describes a species which he received from China, under this name of *H. fruticosa*, but as it differs in several respects from that which Linneus describes as above in the *Flora zeylanica*, we cannot determine whether it be the same or not. His description runs thus—

Branches four-cornered, smooth, clothed with rhomb-shaped stipules embracing the stalk, from the sinuses of which proceed leaves in pairs, lanceolate, quite entire, scarcely petioled. Flowers in a brachiate thyrses or panicle divided in the same manner as in the *Galiums*. Involucres none, but two subulate leaflets at the ramifications. Corolla tomentose within. Stamens in the middle of the tube; filaments very short; anthers linear. Style longer than the corolla: stigma capitate. Capsule ovate, four-toothed with the calyx. Seeds solitary, oblong.

4. Stems smooth, long. Branches long, jointed, alternate. Leaves subsessile, smooth, nerved, quite entire, opposite, pendulous. Stipules toothed, joining the peduncles. Flowers many, in whorls, on very short pedicels from each axil. It is accounted a specific in deafness.—Native of Ceylon^c.

5. Stem eight inches high, slender, procumbent. Leaves sessile, smooth, quite entire, opposite. Flowers axillary, in pairs, but often solitary: corolla white, subcampanulate. Stamens short. Stigma oblong, bifid. Capsule twin, crowned with the four tips of the calyx^d; small, marked with two grooves, compressed at the tip; partition contrary to the cleft. Receptacle roundish, convex, excavated, the whole fastened to the middle of the partition on both sides. Seeds very numerous, small, smooth, brown^e.—Native of Ceylon and Cochin-China.

6. Perennial. Stems filiform, weak as in *Stellaria graminea*, a foot long. Leaves remotely opposite. Corolla blue; the segments before noon expanding very wide, in the evening two upright, and two bent back. Anthers upright, nearly equal, blue. Germ retuse: style the length of the corolla: stigma bifid, rolled back, villose. Capsule compressed, two-furrowed, two-valved, retuse; partition contrary; gaping

^a Linn. suppl.

^b Linn. zeyl.

^c Ibid.

^d Loureiro.

^e Gartner.

at the tip. Seeds very minute, numerous.—Native of the East Indies. *Koenig*^f. It is repeated under the name of *Oldenlandia stricta* in *yst. veg.* 162. 10. but it belongs rather to this genus^g.

7. Stems half a foot in length, decumbent, quadrangular, hispid, with a branch or two. Leaves petioled, acuminate, entire, hispid on both sides. Petioles extremely hispid, united with the filiform-torn stipules so as to form a short sheath. Pedicels scarcely observable. Calyx hispid. Segments both of that and the corolla sharp. Stamens the length of the corolla. Style longer, club-shaped. Capsule half-two-celled, the partition disappearing in the middle, and not reaching to the tip. Seeds many.—Brought from Canton by *Wennerberg*^h.

8. This is a shrub, seldom exceeding three feet in height. Branches diffused, often procumbent at the base, otherwise erect. Leaves linear, acuminate, quite entire, fleshy, thick, shining, grooved at the back, convex on the sides, opposite, numerous. The petioles are united on each side by a membrane embracing the branch, and blunt with a point. Flowers yellow, without scent, sessile, axillary, solitary; the germ and part of the corolla is concealed within the sinus of the leaf. There is a single stipule on each side of the germ, of the same length and form with a calycine leaflet.—Native of Havana, on rocks by the sea coastⁱ: also of Jamaica^k.

HEDYPNOIS. (*Ἡδύπνοος*, breathing a pleasant odour.)

Lin. gen. Schreb. n. 1243. *Tournef. t.* 271. *Juss.* 169. *Gartn. t.* 160. *Huds. angl.* 340.—*Rhagiadioloides. Vaill. mem. acad.* 1721. 29, 30.

Class. 19. 1. *Syngenesia Polygamia Æqualis.*

Nat. order of Compositæ Semiflosculosæ.—Cichoraceæ, Juss.

GENERIC CHARACTER.

CAL. Common calyced, cylindrical, ten-leaved or thereabouts, permanent: scales linear, erect, acute, equal; calyced at the base with fewer, narrower scales, which are short and close.

COR. Compound subimbricate, uniform: corollules hermaphrodite, many.—*Proper* monopetalous, ligulate, linear, truncate, five-toothed.

STAM. Filaments five, capillary, very short. Anther cylindrical, tubulous.

PIST. Germ oblong. Style filiform, length of the stamens. Stigmas two, reflex.

PER. none. Common calyx hardened, converging, almost globular, covering the marginal seeds with its scales.

SEEDS solitary, somewhat oblong, bowed in a little, streaked, roughish, the length of the calyx.

The outer crowned with the calycle membranaceous, erectish, obscurely five-cornered, toothletted. Pappus none.

The inner crowned with the calycle obscure, many-bristled, very short, within which is a pappus of five erectish, awned chaffs.

REC. naked.

ESSENTIAL CHARACTER.

Cal. calyced, with short scales. Seeds crowned with the calycle: outer without down, covered up in the scales of the calyx; inner having a down of five erectish awned chaffs. *Recept.* naked, hollow-dotted. This genus embraces some species of *Hyoseris* and of *Crepis*; and, according to *Jussieu*, *Lapfana Zacintha*, *Einn.*—For *Hudson's* species of *Hedypnois* see *Apargia*. See also *Leontodon* and *Tragopogon*.]

HEDYSARUM. (*Ἡδύσαρον* of *Theophrastus* and *Dioscorides*. From *Ἡδύσμα*, sweetness, and *ἀρόν*, ointment.)

Lin. gen. n. 887. *Reich.* 961. *Schreb.* 1204. *Tournef.* t. 225. *Juss.* 362. *Gartn. t.* 155. *Onobrychis. Tourn.* 211. *Alhagi. Tourn.* 489.

Class. 17. 4. *Diadelphia Decandria.*

Nat. order of Papilionaceæ or Leguminosæ.

GENERIC CHARACTER.

CAL. Perianth one-leaved, half-five-cleft: clefts subulate, upright, permanent.

COR. Papilionaceous, streaked.—Banner reflex-compressed, ovate-oblong, emarginate, long. Wings oblong, narrower than the other petals, straight. Keel straight,

compressed, broader outwardly, transversely blunt, from the base to the swelling part bifid.

STAM. Filaments diadelphous (simple and nine-cleft,) bent in at a right angle. Anthers roundish, compressed.

PIST. Germ slender, compressed, linear. Style subulate, bent in with the stamens. Stigma very simple.

PER. Legume with roundish, compressed joints, two-valved and containing one seed.

SEED kidney-shaped, solitary.

OBS. The pericarp differing in this genus, has occasioned its being unnaturally separated into several genera.

Onobrychis Tourn. has a legume of one joint.

Hedysarum T. has a legume of several joints united like the links of a chain.

Alhagi T. is distinguished from *Hedysarum T.* by alternate leaves.

ESSENTIAL CHARACTER.

Cor. keel transversely obtuse. Legume jointed, with one seed in each joint.

SPECIES.

* With simple leaves.

1. *Hedysarum Alhagi. Prickly Hedysarum.*

Lin. spec. 1051. *Reich.* 3. 500. *Gron. orient.* 228. *Gmel. itin.* 2. t. 29. *Lerche nov. act. nat. cur.* 5. app. 167.

Genista-spartium spinosum, fol. polygoni. Bauh. pin. 394.

G. spinosa fl. rubro. Wheeler's travels.

Agul. Rauw. itin. t. 14. Leaves lanceolate obtuse, stem shrubby thorny.

[2. *Hedysarum bupleurifolium. Hare's-ear-leaved Hedys.*

Lin. spec. 1051. *yst.* 672. *Reich.* 3. 500. *Pet. gaz.* t. 11. f. 12. (*Ornithopodium*).

Leaves lanceolate acute, stem unarmed, stipules scarious.

3. *Hedysarum linifolium. Flax-leaved Hedysarum.*

Lin. syst. 672. *suppl.* 331.

Indigofera linifolia. Vahl symb. 1. 55.

Leaves linear hoary, stem prostrate, legumes globular.

4. *Hedysarum nummularifolium. Money-wort-leaved H.*

Lin. spec. 1051. *Reich.* 3. 501. *fl. zeyl. n.* 288. *Burm. ind.* 64.

H. rotundifolium. Vahl symb. 2. 81. & 3. 89.

Leaves wedge-shaped.

5. *Hedysarum moniliferum. Necklace Hedysarum.*

Lin. syst. 672. *Reich.* 3. 501. *mant.* 102. *Burm.*

ind. t. 52. f. 3. *Petiv. gaz. t.* 26. f. 4. (*Onobrychis*).

Leaves orbiculate, legumes necklace-shaped globular-jointed.

6. *Hedysarum styracifolium. Storax-leaved Hedysarum.*

Lin. spec. 1052. *Reich.* 3. 501.

Leaves cordate-orbiculate retuse smooth on the upper surface, tomentose underneath.

7. *Hedysarum reniforme. Kidney-leaved Hedysarum.*

Lin. spec. 1051. *yst.* 672. *Reich.* 3. 501. *Burm.* *ind. t.* 52. f. 1. *Loureiro fl. cochinch.* 447.

Leaves kidney-shaped, stem columnar.

8. *Hedysarum fororium.*

Lin. syst. 672. *Reich.* 3. 501. *mant.* 270. *Pet. gaz.* t. 33. f. 1. (*Lens*).

Glycine monophyllos. Burm. ind. 161. t. 50. f. 2.

Leaves kidney-shaped emarginate, stem three-sided.

9. *Hedysarum vespertilionis. Bat-winged Hedysarum.*

Lin. syst. 672. *suppl.* 331. *Loureiro fl. Cochinch.* 447. *Jacqu. ic. vol.* 2. *collect.* 2. 329.

Leaves simple and ternate, middle leaflets two-lobed, lobes lanceolate divaricate, legumes plaited.]

10. *Hedysarum gangeticum. Oval-leaved Hedysarum.*

Lin. spec. 1052. *yst.* 672. *Reich.* 3. 502. *Burm.* *zeyl.* 113. t. 49. f. 2. *Pluk. alm.* t. 50. f. 3.

(*Onobrychis*). *Loureiro fl. cochinch.* 448.

Phaseolus montanus. Rumph. amb. 6. 146. t. 66. *Burm. ind.* 164.

Leaves ovate acute stipuled.

11. *Hedysarum maculatum. Spotted Hedysarum.*

Lin. spec. 1051. *Reich.* 3. 502. *hort. cliff.* 449. *upf.* 233. *fl. zeyl. n.* 290. *Dill. elth.* 170. t. 141. f. 168.

Leaves ovate obtuse.

^f Linn. suppl. ^g Swartz obs. ^h Retzius. ⁱ Jacquin.

^k Sloane.

- [12. *Hedysarum latebrosum*.
Lin. syst. 672. *Reich.* 3. 502. *mant.* 270. *Pet. gaz.* t. 30. f. 11.
 Leaves ovate serrulate, legumes hid by a vaulted supine scariose bracte.
13. *Hedysarum vaginale*. *Sheathed Hedysarum*.
Lin. spec. 1052. *syst.* 673. *Reich.* 3. 503. *fl. zeyl.* n. 287. *Burm. zeyl.* 104. t. 49. f. 1. (*Genista*).
 Leaves cordate-lanceolate, petioles simple, stipules sheathing.
14. *Hedysarum glumaceum*.
Gmel. syst. 1121.
Hedysarum violaceum.
Vahl symb. 1. 54. *Forsk. descr.* 136.
 Leaves simple lanceolate, stipules and calyxes scariose, legumes wrinkled.
15. *Hedysarum imbricatum*. *Imbricate-leaved Hedysarum*.
Lin. syst. 673. *suppl.* 330.
 Leaves cordate sessile stipuled, the upper ones imbricate flower-bearing.]
16. *Hedysarum triquetrum*. *Triangular-branched Hedys.*
Lin. spec. 1052. *syst.* 673. *Reich.* 3. 503. *fl. zeyl.* n. 286. *Loureiro fl. cochinch.* 448. *Burm. ind.* t. 52. f. 2. *Burm. zeyl.* 176. t. 81. (*Onobrychis*).
Phaseolatus montanus 7. *Rumph. amb.* 6. 146.
 Leaves oblong, petioles winged, branches three sided.
- [17. *Hedysarum strobiliferum*. *Strobile bearing Hedys.*
Lin. spec. 1053. *Reich.* 3. 503. *fl. zeyl.* n. 289. *Burm. ind.* 165. (*Onobrychis*).
 Bractes of the strobiles inflated cordate obtuse.
18. *Hedysarum gramineum*. *Grass-leaved Hedysarum*.
Retz. obs. 5. n. 70.
 Leaves linear-lanceolate, stipules scariose, racemes naked, pedicels two-flowered, teeth of the calyx bearded.]
- ** With conjugate leaves.
19. *Hedysarum diphyllum*. *Two-leaved Hedysarum*.
Lin. spec. 1053. *syst.* 673. *Reich.* 3. 504. *fl. zeyl.* n. 291. *Swartz obs.* 285. *Brown. jam.* 301. 10. *Sloan. jam.* 1. 185. *Raii suppl.* 458. *Pluk. alm.* t. 246. f. 6. & t. 102. f. 1. (*Onobrychis*). *Rheed. mal.* 9. 161. t. 82. (*Nelam-mari*). *Raii suppl.* 404.
 β. *H. bifolium*, &c. *Burm. zeyl.* 114. t. 50. f. 1. *Loureiro fl. cochinch.* 449.
 Leaves binate petioled, bractes in pairs ovate acute sessile.
- *** With ternate leaves.
- [20. *Hedysarum adscendens*.
Swartz prodr. 106.
 Leaves roundish pubescent underneath, stem columnar, branches declined ascending hairy, racemes simple erect axillary.
21. *Hedysarum pulchellum*.
Lin. spec. 1053. *syst.* 673. *Reich.* 3. 504. *fl. zeyl.* n. 292. *Loureiro fl. cochinch.* 449. *Burm. ind.* 165. *Burm. zeyl.* 116. t. 52. *Pluk. amaltb.* t. 433. f. 7. (*Onobrychis*).
 Bractes in pairs conjugate orbiculate marked with lines.
22. *Hedysarum elegans*.
Loureiro fl. cochinch. 450.
 Leaves obtuse tomentose on both sides, bractes conjugate ovate, legumes bowed.
23. *Hedysarum spartium*.
Lin. syst. 673. *Reich.* 3. 504. *mant.* 271. *Burm. ind.* 166. t. 51. f. 2.
 Leaves ternate and simple somewhat tomentose, stem dichotomous, flowers in pairs, legumes jointed hispid.
24. *Hedysarum lineatum*.
Lin. spec. 1054. *syst.* 673. *Reich.* 3. 505. *Burm. ind.* t. 53. f. 1.
 Leaves oblong marked with lines, racemes axillary pendulous.
25. *Hedysarum supinum*.
Swartz prodr. 106. *Sloan. jam.* 2. 185. t. 118. f. 2.
 Leaves ovate bluntish hoary-villose underneath, stem branched procumbent, racemes simple erect terminating.]
26. *Hedysarum canum*.
Gmel. syst. 1124.
H. incanum. *Swartz prodr.* 107. *Plum. ic.* t. 149. f. 1.
H. canescens. *Mill. dict.*

- Leaves ovate acuminate hoary underneath, stem columnar branched erect, racemes terminating erect, legumes declined rough with hairs.
- [27. *Hedysarum retroflexum*.
Lin. syst. 673. *Reich.* 3. 505. *mant.* 103.
 Racemes erect, legumes pendulous many-jointed.]
28. *Hedysarum trigonum*.
Swartz prodr. 107. *Brown. jam.* 301. 7.
H. intortum. *Mill. dict.*
 Leaves ovate acute rough with hairs, stem climbing three-sided, racemes very long axillary, legumes writhed bent in.
- [29. *Hedysarum umbellatum*.
Lin. spec. 1053. *syst.* 673. *Reich.* 3. 505. *fl. zeyl.* n. 293. *Burm. zeyl.* 115. t. 51.
Folium crocodili. *Rumph. amb.* 4. 112. t. 52.
 Peduncles umbelliferous, stem shrubby.
30. *Hedysarum biarticulatum*.
Lin. spec. 1054. *Reich.* 3. 505. *fl. zeyl.* n. 296. *Burm. zeyl.* 114. t. 50. f. 2. *Raii suppl.* 457. 30. (*Onobrychis*).
 Stem undershrubby, legumes two-jointed.
31. *Hedysarum lappaceum*.
Vahl symb. 1. 54. *Forsk. descr.* 136.
 Leaves ternate obcordate, flowers axillary subsolitary, legumes two-jointed with hooked bristles.
32. *Hedysarum heterocarpon*.
Lin. spec. 1054. *Reich.* 3. 506. *fl. zeyl.* n. 294. *Burm. zeyl.* 117. t. 53. f. 1. *Thunb. jap.* 287.
 Flowers panicle-spiked, legumes jointed, the lowest one-seeded, stipules bristle-shaped.
33. *Hedysarum viscidum*.
Lin. spec. 1054. *Reich.* 3. 506. *fl. zeyl.* n. 295. *Burm. ind.* 167. *Burm. zeyl.* 187. t. 84. f. 1. (*Phaseolus*).
 Legumes membranaceous even entire, stem and branches hispid.
34. *Hedysarum scorpiurus*.
Swartz prodr. 107. *Brown. jam.* 301. 9.
 Leaves oblong hirsute underneath, stems procumbent three-cornered, racemes axillary, legumes roundish, upright.]
35. *Hedysarum canadense*. *Canadian Hedysarum*.
Lin. spec. 1054. *syst.* 673. *Reich.* 3. 506. *hort. upf.* 232. *cliff.* 365. *Corn. canad.* 44. t. 45. *Mor. hist.* 2. 130. f. 2. t. 11. f. 9. (*Onobrychis*). *Park. theat.* 1090. f. 10.
 Leaves simple and ternate, stem even, flowers racemed.
- [36. *Hedysarum gyrans*. *Sensitive Hedysarum*.
Lin. syst. 675. *suppl.* 332. *Ait. hort. kew.* 3. 64. *Shaw. nat. misc.* t. 70. *Swartz obs.* 289. *Jacqu. ic.* vol. 2. *collect.* 3. 181.
 Leaves oval-lanceolate obtuse, the lateral ones minute.
37. *Hedysarum canescens*. *Rough-leaved Hedysarum*.
Lin. spec. 1054. *syst.* 674. *Reich.* 3. 506. *mant.* 447. *hort. upf.* 232. *cliff.* 365. *Gron. virg.* 108. *Pluk. alm.* t. 308. f. 5.
 Leaves scabrous underneath, stem hispid, flowers racemed conjugate.
38. *Hedysarum repandum*.
Vahl symb. 2. 82.
 Leaves ternate repand-crenate, racemes terminating elongated.
39. *Hedysarum adhærens*.
Vahl symb. 2. 82.
 Leaves ternate oblong, racemes axillary, legumes cylindric jointed villose.
40. *Hedysarum marilandicum*. *Maryland Hedysarum*.
Lin. spec. 1055. *Reich.* 3. 507. *Gron. virg.* 109. *Dill. elth.* 174. t. 144. f. 171. *Raii suppl.* 455. 3.
 Leaves roundish, stem frutescent branched very much, legumes jointed even.]
41. *Hedysarum tortuosum*. *Twisted-podded Hedysarum*.
Swartz prodr. 107. *Ait. hort. kew.* 3. 64. *Sloan. jam.* 1. 184. t. 116. f. 2. *Brown. jam.* 301. 8. *Vahl symb.* 2. 82.
H. purpureum. *Mill. dict.* n. 6.
 Leaves oval-oblong obtuse smoothish, racemes erect axillary, legumes twisted compressed pubescent.
42. *Hedysarum spirale*. *Spiral-podded Hedysarum*.
Swartz prodr. 107.
H. procumbens. *Mill. dict.* n. 10.
 Leaves ovate obtuse smooth, stem very much branched, with diffused branches, racemes loose divaricate, legumes spirally twisted.

43. *Hedysarum frutescens*.
Lin. spec. 1055. *Reich.* 3. 507. *Jacqu. hort.* 3. t. 89. *Gron. virg.* 109.
Leaves subovate villose underneath, stem frutescent.
- [44. *Hedysarum axillare*.
Swartz prodr. 107. *Brown. jam.* 301. 6.
Leaves rhomboid-roundish, stem creeping rooting, petioles upright, scapes axillary longer than the leaves.
45. *Hedysarum viridiflorum*. *Green-flowered Hedysarum*.
Lin. spec. 1055. *Reich.* 3. 507. *Gron. virg.* 109.
Pluk. alm. t. 308. f. 5. (*Onobrychis*).
Leaves sharpish, stem upright, racemes very long upright.
46. *Hedysarum hirtum*.
Lin. spec. 1055. *syft.* 674. *Reich.* 3. 508. *Gron. virg.* 2. 108. & edit. 173. (*Trifolium*).
Leaves oval, stem shrubby, spikes oblong, calyxes and fruits hirsute one-seeded.
47. *Hedysarum junceum*. *Slender-branched Hedysarum*.
Lin. syft. 674. *Reich.* 3. 508. dec. 1. t. 4. *Amm. ruth.* 154. & 281. (*Cytisus*).
Leaves lanceolate, legumes one-jointed rhomb-shaped, peduncles subumbelled lateral.
48. *Hedysarum violaceum*. *Violet-flowered Hedysarum*.
Lin. spec. 1055. *Reich.* 3. 508. *Gron. virg.* 2. 108. & 1. 87.
Leaves ovate, flowers in pairs, legumes naked veined jointed rhomb-shaped.
49. *Hedysarum paniculatum*. *Panicled Hedysarum*.
Lin. spec. 1056. *syft.* 674. *Reich.* 3. 508. *Gron. virg.* 2. 108. *Pluk. mant. t.* 432. f. 6.
Leaves linear-lanceolate, flowers panicled, legumes rhomb-shaped.
50. *Hedysarum nudiflorum*. *Naked-flowered Hedysarum*.
Lin. spec. 1056. *syft.* 674. *Reich.* 3. 509. *Gron. virg.* 2. 107. & edit. 1. 86.
Flowering stem naked, leafy stem angular.]
51. *Hedysarum repens*. *Creeping Hedysarum*.
Lin. spec. 1056. *syft.* 674. *Reich.* 3. 509. *Gron. virg. ed.* 1. 86. & 2. 108.
Leaves obcordate, stems procumbent, racemes lateral.
- [52. *Hedysarum hamatum*. *Hook-podded Hedysarum*.
Lin. spec. 1056. *Reich.* 509. amæn. 5. 403. *Brown. jam.* 298. 1. (*Trifolium*). *Sloan. jam.* 1. 187. t. 119. f. 2. (*Anonis*).
Stylophanthes procumbens. Swartz prodr. 108 obs. 286.
 β. *Trifolium* 2. *Brown. jam.* 299. *Sloan. jam.* 1. 186. t. 119. f. 1. *Burm. zeyl.* 226. t. 106. f. 2.
Stylophanthes viscosa. Swartz prodr. 108.
Leaves nerved naked; spikes sessile; legumes two-seeded, covered, having a hooked point.
53. *Hedysarum triflorum*.
Lin. spec. 1057. *Reich.* 3. 509. fl. *zeyl. n.* 297. *Burm. zeyl.* 119. t. 54. f. 2. *Loureiro fl. cochinch.* 450. *Swartz obs.* 288.
 β. *Burm. zeyl.* 118. t. 54. f. 1. *Retz. obs.* 4. n. 95.
Leaves obcordate, stems procumbent, peduncles one-flowered seldom three together.
54. *Hedysarum barbatum*. *Bearded Hedysarum*.
Lin. spec. 1055. *Reich.* 3. 510. amæn. 5. 403. *Swartz obs.* 287.
Racemes oblong somewhat branched, legumes bent in, calyxes hairy.
55. *Hedysarum lagopodioides*.
Lin. spec. 1057. *syft.* 674. *Reich.* 3. 510. *Burm. ind.* 68. t. 53. f. 2. *Loureiro fl. cochinch.* 450.
Racemes oblong, legumes bent in, calyxes hirsute.
56. *Hedysarum microphyllum*.
Lin. syft. 675. *Thunb. jap.* 284.
Leaves ovate villose, stem frutescent upright smooth, flowers terminating panicled.
57. *Hedysarum racemosum*.
Lin. syft. 675. *Thunb. jap.* 285.
Leaves oblong stipuled smooth, stem frutescent, upright, racemes axillary upright very long, legumes smooth.
58. *Hedysarum caudatum*.
Lin. syft. 675. *Thunb. jap.* 286.
Leaves oblong smooth, stem herbaceous, panicle terminating, legumes tomentose.
59. *Hedysarum tomentosum*.
Lin. syft. 675. *Thunb. jap.* 286.
Leaves tomentose underneath, stem angular tomentose, racemes axillary.
60. *Hedysarum sericeum*.
Lin. syft. 675. *Thunb. jap.* 287.
Leaves emarginate villose, stem frutescent upright, flowers axillary solitary.
61. *Hedysarum virgatum*.
Lin. syft. 675. *Thunb. jap.* 288.
Leaves obtuse with a point, stem angular, hairy, peduncles capillary three-flowered.
62. *Hedysarum pilosum*.
Lin. syft. 675. *Thunb. jap.* 288.
Leaves ovate acuminate, stem decumbent rough with hairs, racemes axillary.
63. *Hedysarum striatum*.
Lin. syft. 675. *Thunb. jap.* 289.
Leaves oblong stipuled, stem herbaceous, flowers axillary solitary.
64. *Hedysarum volubile*. *Twining Hedysarum*.
Lin. spec. 1057. *Reich.* 3. 510. hort. cliff. 499. *Dill. elth.* 173. t. 143. f. 170.
H. scandens. Mill. dict. n. 13? See n. 89.
Leaves ovate-oblong, stem twining.
65. *Hedysarum triangulare*.
Retz. obs. 3. n. 83.
Leaves ovate acute marked with lines, umbels axillary, branches three-sided flexuose.
- ***** With pinnate leaves.
66. *Hedysarum argentatum*. *Silvery Hedysarum*.
Lin. syft. 675. *Reich.* 3. 511. suppl. 333.
H. grandiflorum. Pallas itin. 2. 743. t. y.
Astragalus grandiflorus. Lin. spec. 1071. *Gmel. fib.* 4. 61. n. 78. t. 31. *Amm. ruth.* 168.
Leaflets silky underneath and shining, legumes jointed, stem leafless.
67. *Hedysarum alpinum*. *Alpine Hedysarum*.
Lin. spec. 1057. *syft.* 676. *Reich.* 3. 511. hort. upf. 232. *Gært. fruct.* 347. *Loureiro fl. cochinch.* 451. *Gmel. fib.* 4. 26. n. 35. t. 10. *Amm. ruth.* 116. n. 152. 153.
Legumes jointed smooth pendulous, stem upright.
68. *Hedysarum obscurum*. *Creeping-rooted Hedysarum*.
Lin. spec. 1057. *syft.* 676. *Reich.* 3. 511. mant. 447. *Jacqu. austr.* 2. t. 168. *Gmel. fib.* 4. 29. t. 12. *Hall. belv. n.* 395. t. 12. *D'Affo aragon. n.* 707. *Curt. magaz.* 282.
H. alpinum. Jacqu. vind. 266.
Stipules sheathing, stem upright flexuose, flowers pendulous.]
69. *Hedysarum coronarium*. *Common Hedys. or French Honeyfuckle*.
Lin. spec. 1058. *Reich.* 3. 512. hort. cliff. 365. upf. 231. *Gært. fruct.* 346. *Beß. eyf. est.* 13. t. 2. f. 1. *Rivin. tetr. t.* 98. *Fl. rust. t.* 115.
H. clypeatum. Ger. emac. 1235. *Raii hist.* 929. *Park. parad.* 339. t. 337. f. 10.—vulgare. *theat.* 1087. f. 1.
Onobrychis femine clypeato aspero major. Baub. pin. 350.
O. altera. Dod. pempt. 549. *Mor. hist.* 2. 129. n. 7. f. 2. t. 11. f. 7.
Legumes jointed prickly naked straight, stem diffused.
70. *Hedysarum flexuosum*. *Waved-podded Hedysarum*.
Lin. spec. 1058. *Reich.* 3. 512. *Rivin. tetr. t.* 213. *Mor. hist.* 2. 130. n. 8. *Raii hist.* 929. 3. (*Onobrychis*).
Legumes jointed prickly flexuose, stem diffused.
- [71. *Hedysarum humile*. *Dwarf Hedysarum*.
Lin. spec. 1058. *syft.* 676. *Reich.* 3. 512. mant. 447. *Gouan illust.* 48. *Raii hist.* 929. 2. *Park. theat.* 1082. n. 7.
Onobrychis fem. clypeato aspero minor. Baub. pin. 350. *prodr.* 149.
Polygalo Gesneri affine Caput gallinaceum. Baub. hist. 2. 336.
Legumes jointed rough, wings of the corolla obsolete, spikes hirsute, stems depressed.]
72. *Hedysarum spinosissimum*. *Prickly Hedysarum*.
Lin. spec. 1058. *syft.* 676. *Reich.* 3. 513. hort. upf. 231. *Pluk. phyt. t.* 50. f. 2.
Legumes jointed prickly tomentose, stem diffused.
- [73. *Hedy-*

- [73. *Hedysarum virginicum*.
Lin. spec. 1058. *Reich.* 3. 513. *Gron. virg.* 174.
Loureiro cochinch. 451.
 Stem shrubby, legumes jointed smooth peduncled upright.
74. *Hedysarum fruticosum*.
Lin. syst. 676. *suppl.* 333. *Pallas itin.* 3. 753. t. F.
 Leaflets alternate oblong soft, stipules subulate, racemes axillary, joints of the legumes netted.]
75. *Hedysarum pumilum*.
Lin. spec. 1059. *syst.* 676. *Reich.* 3. 513. *mant.* 448.
 Stem undershrubby, wings shorter than the banner and banner shorter than the keel, legumes one-seeded.
76. *Hedysarum argenteum*.
H. sericeum. *Vahl symb.* 2. 83. t. 41.
Onobrychis orientalis argentea, fructu echinato minimo.
Tournef. cor. 26. *Shaw itin.* n. 431.
Ebenus pinnata. *Ait. hort. kew.* 3. 27.
 Leaves pinnate, legumes one-seeded wrinkled, spikes ovate very hairy, stems erect hairy.
77. *Hedysarum Onobrychis*. Cultivated *Hedys.* *Saintfoin* or *Cock's-head*.
Lin. spec. 1059. *Reich.* 3. 514. *hort. cliff.* 365. *upf.* 231. *Huds. angl.* 322. *With.* 785. *Sowerby Engl. Bot.* t. 96. *Fl. rust.* t. 47. *Pollich pal.* n. 694. *Jacqu. austr.* t. 352. *Crantz. austr.* 424. *Gmel. fib.* 4. 31. n. 48. *Krock. filif.* n. 1190. *Russ. alepp.* t. 11. f. 2. *Villars dauph.* 3. 392.
Onobrychis. *Rivin. tetr.* t. 2. *Dod. pempt.* 548. 2. *Gouan illustr.* 48. *Hall. belv.* n. 396.—vulgaris. *Park. theat.* 1082. 1.—f. caput gallinaceum. *Lob. ic.* 2. 81. 1. *Ger.* 1062. 1. *emac.* 1243. 1. *Raii hist.* 914. 1. *syn.* 327. *Mor. hist.* 2. 131. n. 10. f. 2. t. 11. f. 10. *Mill. dict. edit.* 7. n. 1.
O. viciæfolia. *Scop. carn.* 2. n. 918.
O. fol. viciæ, fructu echinato, major. *Baub. pin.* 350.
Polygalon Gefneri. *Baub. hist.* 2. 335. 2.
β. O. incana, fol. longioribus. *Baub. pin.* 350.
γ. O. fol. viciæ, fr. echinato minimo. *Baub. pin.* 350.
 Legumes one-seeded prickly, wings of the corolla equal in length to the calyx, stem elongated.
78. *Hedysarum faxatile*. Rocky *Hedysarum*.
Lin. spec. 1059. *syst.* 676. *Reich.* 3. 514. *Pallas itin.* 2. 107. *Ger. prov.* 504. 2. *Allion. pedem.* n. 1191. t. 19. f. 1. *Villars dauph.* 3. 393.
 Legumes one-seeded, furrowed, without prickles; wings of the corolla very short, scapes subradicate.
79. *Hedysarum Caput galli*. *Cock's-head Hedysarum*.
Lin. spec. 1059. *Reich.* 3. 515. *Ger. prov.* 504. 4.
Onobrychis Crista galli. *Gartn. fruct.* 2. 318.
O. fructu echinato, minor. *Baub. pin.* 350. *prodr.* 149. *Mill. dict. ed.* 7. n. 3. *Raii hist.* 914. 2.
 Legumes one-seeded, teeth of the crest subulate, wings very short, stem diffused.
80. *Hedysarum Crista galli*. *Cock's-comb Hedysarum*.
Lin. syst. 676. *Reich.* 3. 515. *Triumph. obs.* 65. *Russ. alepp.* t. 12.
 Legumes one-seeded prickly, divisions of the crest lanceolate toothletted.
81. *Hedysarum crinitum*. Crooked-podded *Hedysarum*.
Lin. syst. 677. *Reich.* 3. 515. *mant.* 102. *Burm. ind.* 169. t. 56. *Loureiro cochinch.* 451.
 Racemes long, legumes bent in, stem shrubby.
82. *Hedysarum comosum*.
Vahl symb. 2. 84.
H. pictum. *Jacqu. ic.* 3. 567. *collect.* 2. 262.
 Leaves pinnate lanceolate, racemes elongated cylindric, stem shrubby.
83. *Hedysarum cornutum*. Horned *Hedysarum*.
Lin. spec. 1060. *syst.* 677. *Reich.* 3. 515. *Pallas itin.* 1. 442. *Tournef. cor.* 26. *itin.* 2. t. 108. (*Onobrychis*).
 Leaflets linear, legumes one-seeded even, stem shrubby, peduncles permanent-thorny.
84. *Hedysarum incanum*. Hoary-leaved *Hedysarum*.
Lin. syst. 677. *Thunb. jap.* 289.
 Leaves without stipules hoary underneath, stem erect, flowers in racemes drooping.
85. *Hedysarum lineare*. Linear-leaved *Hedysarum*.
Loureiro cochinch. 452.
 Leaflets lanceolate-linear, spikes terminating, legumes straight smooth and even, stem diffused.]

86. *Hedysarum sericeum*.
Mill. dict. n. 8.
 Leaves ternate, leaflets ovate silky underneath, flowers in spikes axillary and terminating.
87. *Hedysarum villosum*.
Mill. dict. n. 9.
 Leaves ternate, stem diffused villose, flowers in terminating spikes, calyxes very villose.
88. *Hedysarum glabrum*.
Mill. dict. n. 12.
 Leaves ternate, leaflets obcordate, stem panicled, legumes smooth, one-seeded.
89. *Hedysarum scandens*.
Mill. dict. n. 13.
 Leaves ternate, leaflets cbovate, stem twining, spike very long, bent back.
90. *Hedysarum pedunculatum*.
Mill. dict. n. 17.
 Leaves ternate, the middle leaflet on a longer petiole, racemes axillary, upright very long.

DESCRIPTIONS, &c.

[The numerous species of this genus are mostly herbaceous, some few however (1. 6. 12. 16. 17. 18. 27. 29. 30. 40. 43. 46. 56. 57. 60. 73. 74. 75. 81. 83.) are shrubby, at least at bottom. The leaves are simple, ternate, or unequally pinnate; in one case only binate: hence the subordinate division of the genus into four parts. The stipules are distinct from the petiole. The petiolules of the ternate leaves are jointed into the petiole, and are frequently substipulated with a filiform stipule. The flowers are axillary with one or many-flowered peduncles; or they frequently terminate the stem in spikes or panicles. The bractes are sometimes large, varying in their construction; sometimes small or even almost evanescent. The legume varies in form, being in some species subcylindric with truncate joints; in others compressed, and frequently contracted at the joints either on one side or both. In some sorts the legume consists of one joint only, containing one seed. Some few have both simple and ternate leaves. Of the pinnate-leaved sorts, some have a crested legume, and are distinguished by the name of *Onobrychis*. The motion of the leaves in *H. gyrans* (36) is very remarkable^a.

Only one species (77) of this vast genus, namely the *Saint-foin* is native of Great Britain: and only ten are natives of Europe. Far the greater part are perennial.]

1. Stems shrubby, about three feet high, branching out on every side. Leaves shaped like those of broad-leaved Knot-grass, very smooth, of a pale green colour, on short foot-stalks. Under these come out thorns, near an inch long, of a reddish brown colour. The flowers come out from the side of the branches in small clusters; they are purple in the middle, and reddish about the rims. Legumes sickle-shaped. [The leaves are scarcely stipulaceous; the spines are axillary, sometimes branched and floriferous: the legumes are coriaceous, subcylindric, and scarcely jointed^b.

Native of the Levant.

It is on this shrub that Manna (*Trungebeen*) is found in Mesopotamia^c; and other Eastern countries.] It is chiefly gathered about Tauris, where the shrub grows plentifully. Sir George Wheeler found it growing in Tinos; Tournefort also found it in many plains of Armenia and Georgia, and made a distinct genus of it under the name of *Alhagi*, [from the Arabic *Agbul* or *Al-gul*.

It was cultivated in 1714, by the Dutchess of Beaufort^d.

2. Stipules the length of the petioles. Legumes even, jointed, equal, upright. It varies with lanceolate and cordate-oblong leaves.

Native of India^e.

3. Annual. Stems wand-like, hoary. Leaves alternate, petioled, acute. Racemes very short, axillary. Legumes small, snow-white, with a permanent style, one-jointed.

^a Jussieu.^b Ibid.^c Russ. Alepp.^d Hort. kew.^e Linn. spec. and zeyl.

Native of India. *Koenig*^f: who sent it under the name of *Indigofera linifolia*, which Vahl has adopted. The habit is different from that of the *Hedyfarums*, and the keel has a spur on each side as in the genus *Indigofera*.

4. Stems long, angular, diffused. Leaves alternate, simple, obversely ovate or wedge-shaped, blunt with a short point, smooth, on a very short petiole. Stipules awl-shaped, longer than the petiole, patulous, very small, clothing the stem. Spikes solitary from the axils, on a long peduncle. Flowers very small. Legumes declined, crescent-shaped, hispid on the back, containing one seed^g.

Native of India.—Introduced in 1777, by Daniel Charles Solander, L.L.D. It is annual, and flowers here from July to September^h.

5. Stems a span long, prostrate. Stipules two-parted, streaked, sharp, scariose. Leaves small, petioled, even, blunt. Heads of flowers axillary. Legumes subfascicled, peduncled, straight, with globular joints often five in number, pubescent (the hairs when magnified appearing hooked), and rather large.

Native of India. Perennialⁱ.

6. Stem shrubby: that and the whole plant villose. Stipules lanceolate^k.—Native of China.

7. Stems annual, a foot and half high, branched, slender, smooth, procumbent. Leaves few, quite entire, smooth, scattered, solitary, the upper ones ternate, on long filiform petioles: (the form of *Asarum* leaves, but small, often retuse, naked). Stipules minute. Flowers violet-coloured, in terminating spikes (or racemes) consisting of few flowers (two only; or a single flower or two in the uppermost axils). Calyx hairy, converging. Banner of the corolla broad and very blunt. Legume slender, of six joints, bent back, smooth^l.

Native of India, and the suburbs of Canton in China.

8. Stem herbaceous, farmentose, smooth, a foot high. Leaves petioled, smooth, spotted. Petiole almost the length of the leaf. Stipules two, oval, small, petioled, at the base of the petioles, so that the leaves might in strictness be looked upon as ternate. Racemes lateral, axillary, capillary, longer than the leaf: pedicels in pairs. Legumes elliptic, smooth, sharp, having two joints, the lower keel having a sinus or two.—It resembles the foregoing species, but is distinguished by its three-sided, farmentose stem, its spotted leaves, and its two-jointed legumes.

Native of India^m.

9. Annual. Stem four feet high, upright, very straight, almost simple, round but four-cornered at the top, furrowed, hispid with very fine hairs, frequently having one or two short upright branchlets. Leaves somewhat crescent-shaped, four lines long, two inches broad, bent like a bow, retuse, three-nerved, veins like a net, smooth, variegated yellow red and green: petioles long, straight, slender, alternately by threes: stipules in pairs, sharp, minute. Flowers in a simple, long, upright, terminating spike (or raceme). Calyx hairy, the three lower segments somewhat longer, all acuminate, and keeled at the back. Corolla white: banner broad-cordate, converging, a little longer than the calyx: wings bent in, shorter than the banner: keel of an intermediate length. Legume linear, smooth, slender; the joints somewhat lens-shaped, connected by the dorsal thread, as they ripen plaited different ways, drawn within the inflated calyx, converging at the tip. Seeds somewhat kidney-shaped, flattened, short, brown, smooth.—There are frequently smaller leaves at the top of the stem, unequally and obtusely three-cornered, and there sometimes ternate.—In Cochinchina, but originally from Siam. It is cultivated for its beauty, and in a gentle breeze, the leaves as they move resemble so many variegated butterfliesⁿ.

Father Loureiro sent this plant into Sweden and England in 1774.—According to the catalogue of the Royal garden at Kew, it was introduced in 1780, by

^f Linn. suppl.

^g Linn. zeyl.

^h Hort. kew.

ⁱ Linn. mant.

^k Linn. spec.

^l Loureiro and Linn. spec.

^m Linn. mant. and syst.

ⁿ Loureiro.

Sir Joseph Banks, Bart.; flowers in July and August, and is biennial.]

10. This is an annual plant, about three feet high, having a slender stalk, inclining to be shrubby. Leaves on very short foot-stalks. Some of the plants send out one or two slender branches from the main stalk, on the lower part of which are leaves of the same form with those of the principal stalk, but smaller. On the upper part of the principal stalk and branches are flowers for near a foot in length, of a worn out purple colour, standing single at each joint. They are succeeded by jointed pods an inch and half long, containing three or four seeds.

[Allied to *H. styracifolium*, but larger^o. Stem diffused, stipuled, round, hairy. Leaves oblong-ovate, or ovate-lanceolate, quite entire, hairy on both sides, alternate. Flowers minute, in long, terminating spikes: banner and keel of the corolla yellow; wings violet-coloured. Legume bowed, at each joint emarginate on the convex side^p.

Native of India, and the suburbs of Canton.—Cultivated in 1768, by Mr. Miller: and flowering here in July and August^q.

11. Perennial (annual, *Mill. & hort. kew.*), low, sessile, but neither procumbent nor creeping. Stems several, from a hand to a long span and a foot in height, either upright or reclining, round, slender, roughish, with slender hairs pressed close. Leaves alternate, resembling those of the Caper and almost as large, thickish, smooth, green with paler spots, having a pair of sharp stipules both at the base of the petioles and of the leaves themselves. Flowers on the upper part of the stalk in pairs one above another, or sometimes three together, on very slender peduncles, forming a long thin spike, in which each pair of flowers is placed in a contrary situation to the next. One segment of the calyx next the banner of the corolla is broader than the rest, which are very slender. Corolla pale violet, (reddish yellow, *Miller*) the banner large in comparison with the other petals; the wings are white at the base, and pale blue towards the end, but the keel is all over white. Legumes brown when ripe, roughish, compressed, in front divided by semicircular portions, but with an even line along the back, each portion when ripe separates, and contains one kidney-shaped seed, slightly compressed^r.

Native of India.—Cultivated in Mr. Sherard's garden at Eltham in 1732. It flowers in July or August.

12. Stem somewhat shrubby, naked; with few, wand-like, divaricate, round branches. Leaves alternate, petioled, remote, with scarcely apparent serratures ending in spines, smooth, the same size with those of *Vaccinium Myrtillus*. Flowers axillary: peduncle very short, two-flowered, with a leafy bracte, resembling a dry wrinkled leaf, and defending the legume from the birds: this is inclining to rhomb-shape, is mucronate, and contains one seed.—Native of India^s.

13. This is allied to *H. bupleurifolium*. It is herbaceous and procumbent. The lower leaves are obversely ovate, emarginate at the base; the upper ones more oblong, cordate-lanceolate, and more acute; all are smooth, veined, and the petioles are roundish. Stipules acuminate. Spikes towards the ends of the stems, long and narrow. Branches few. Legumes cylindric, smooth, jointed, straight, dividing by joints, though they are scarcely apparent on the outside, and there are no divisions within.—It varies with lanceolate leaves^t.

Native of India. Annual.

14. Perennial. Stems woody, procumbent, wand-like, round, smooth, a foot high. Branches shorter than the stem. Leaves on short petioles, spreading, acuminate, smooth, an inch long. Stipules lanceolate-ovate, the length of the petiole. Raceme terminating, when in flower two inches long, when in fruit elongated. Flowers usually in pairs, seldom solitary. Calyx five-parted, scariose, striated, hairy at the tip and on the edge. Legume an inch long; joints from four

^o Linn. syst.

^p Loureiro.

^q Hort. kew.

^r Dillenius.

^s Linn. mant.

^t Linn. syst. and zeyl.

to fix, compressed, roundish, wrinkled, terminated by the permanent style.

It differs from *H. gramineum* (18) in having the joints of the legumes broader, rounder, wrinkled; in other respects it resembles that species much. It is allied to *H. bupleurifolium* (2) and *vaginale* (13); but their legumes are even and directed all the same way. The leaves in *H. bupleurifolium*, *nummularifolium* (4), *molinerum* (5) and *vaginale*, differ very much on the same plant, and are better distinguished by the legumes. It is very different from *violaceum* (48), though Vahl has inadvertently given it the same name.

15. Stems herbaceous, filiform, diffused, branched. Leaves quite entire, sharp, even; the upper ones larger, but very like the others, and stipuled as they are. Stipules semicordate, scariose, patulous. Flowers among the upper leaves, solitary, sessile, shorter, hid by the leaves. It differs from *H. strobiliferum* in having strobiles or scales of a form different from the leaves, in the peduncles and all other parts they agree.

Found by Thunberg at the Cape of Good Hope*. Doubtful whether it may not be the same with *Glycine monophyllum*.

16. Stems many, perennial, shrubby, procumbent, three feet long; with three-sided branches. Leaves alternate, sharp, with the sides right-lined and almost parallel. Flowers purple, in spikes (or racemes) mostly terminating. Banner roundish. Legume compressed, straight, linear, jointed, (not ferrate) hairy. In the Cochinchinese plant, the leaves have not rounded margins, nor refracted petioles, as the plant of Ceylon has; but they have both lanceolate stipules, and the stem inclining to red at the end†.

Native of India, China and Cochinchina.—In Chinese Kasong-so.

17. This is a tree, with oblong-ovate, alternate leaves, quite entire and petioled: stipules subulate; branches round. There are strobiles from the axils of the leaves, as in the Hornbeam, on a simple flexuose peduncle, consisting of cordate, subsessile, obtuse, numerous, imbricate bractes, like the involucre of the *Commelina*, large, and the rudiment of a flower within each of them. These strobiles distinguish this species from all the others, especially from *H. pulchellum*. n. 21. Native of India‡.

18. A shrub determinately branched. Stems round, stiff, jointed. Leaves two inches long, a line and half broad, acuminate, veined, petioles short, brown. Stipules lanceolate, acuminate; there is a second pair at the joint of the stem, which in the more adult branches is resolved into fibres. Racemes stiff, elongated, leafless. Peduncles in pairs, one-flowered, distant. Calyx angular, scariose. Corolla small, purple. Legumes convex-ancipital, smooth, mucronate, joints three to five, perhaps more.

Native of India: sent by Koenig‡.

19. Annual. Stems herbaceous, procumbent, filiform, round, smooth. Leaves alternate: petioles stiff, horizontal, distant, round, smooth: leaflets on very short petioles, oblong, sharp, entire, nerved, smooth, pubescent underneath. Stipules opposite, on the side of the petioles at the base, obliquely ovate, acuminate. Peduncles axillary, terminating, longer than the leaves, upright, stiff, many-flowered. Flowers alternate, on very short pedicels, between two opposite bractes, acuminate at both ends. Corolla yellow or purple. Calyx unequal; the two hinder clefts converging, the two lateral ones smaller, rounded, the lowest sharp, longer. Banner of the corolla roundish, scarcely opening, veined, purplish; wings smaller than the banner; keel bowed in, acuminate. Legume a little longer than the bractes, upright; joints echinate, with one roundish, flattened seed in each^b.

Native of Jamaica, in the hot sandy parts; South America; and the East Indies. Cultivated before 1733 by Mr. Miller, to whom Dr. Houstoun sent the seeds from Vera Cruz.

β. Root fusiform, large. Stems herbaceous, round, slender, eight inches long, diffused. Leaves ovate,

sharp at the tip, smooth, small; common petiole long; stipules in pairs, sharp. Flowers yellow, axillary, solitary; calyx two-lipped, coloured, ciliate. Legume hispid, straight; joints few, lens-shaped.—Found wild near Canton, and in Ceylon^c.

20. Native of Jamaica^d.

21. Stem shrubby, upright, three feet high, round, smooth; branches many, oblique, obtusely angular. Stipules ovate, acuminate, cut, caducous. Leaflets broad-lanceolate, quite entire, smooth, on short petioles, the middle one three times as large as the two others, and on a longer petiole. Spikes of flowers long, straight, terminating. Bractes hiding each three flowers. Corolla yellow. Legume flat, straight, acuminate, composed of two joints defended by the bractes. Native of India and China^e.

22. Stem somewhat shrubby, upright, three feet high, branched. Leaflets ovate, obliquely nerved. Spikes upright, mostly terminating; flowers heaped, yellow, each with two hairy bractes, marked with lines. Legumes curved, hairy, erect, containing three seeds. At first sight this seems to differ little from the foregoing species; it differs however in the leaves being blunt and hairy, the bractes ovate, the crooked form of the legume, and the greater number of flowers and seeds.—Native of China, near Canton^f.

23. This is a whitish plant, with shrubby striated stems, very short blunt stipules, and oblong leaves. Flowers scattered, subpedicelled, in pairs or solitary. Calyx very short, five-toothed. Corolla yellow, with the claw the length of the calyx, and the border flat. Legumes orbicular-compressed, with red bristles, and three joints.—Native of India^g.

24. Stem straight. Racemes scarcely divided, the same length with the leaves, with the flowers hanging on loose pedicels. Legumes rhomb-shaped, of one joint only, with one seed.—Native of Ceylon^h.

25. Root long, small, woody. Stems a foot long, reddish, rough, round, woody. Leaves at unequal distances, on petioles half an inch in length; leaflets pale underneath, the middle one longest. Corolla purple. Legumes crooked, forming a semicircle, brown, the joints united by so small an isthmus, that when they adhere by their roughness to the clothes, they separate, whence the Portuguese name of *Erva d'Amor*. Every joint contains one pale yellow seed.—It grows almost every where in the woods of Jamaicaⁱ.]

26. Stem shrubby, about five feet high, dividing into several branches. The middle leaflet is much larger than the other two. The stalks are terminated by long spikes of small purple flowers, which are succeeded by narrow pods, straight on one side, but jointed on the other.

Native of Jamaica, whence Dr. Houstoun sent the seeds to Mr. Miller; [and also of Hispaniola.

Cultivated by Mr. Miller before 1733.—Swartz has adopted the name *incanum*, which Thunberg had given to another species.

27. A shrub; very much resembling *H. lineatum* (n. 24.), but the legumes have several joints. Leaflets ovate, tomentose underneath, silky. Racemes lateral and terminating, with pendulous, filiform peduncles. Legumes compressed, with one edge repand, and from four to seven joints.—Native of India^k.

28. It is a climber, and raises itself generally to the top of the tallest trees in the wood. The stem is every where beset with small hooked bristles, or rough hairs. The leaves are much like those of the kidney-bean; and all the branches terminate in a large and beautiful flower-spike^l.

Native of Jamaica: whence the seeds were sent by Dr. Houstoun to Mr. Miller, who must therefore have cultivated it before 1733.

29. A shrub with woody branches, the lower ones round and brown, the upper ones angular and villose. Leaves petioled; leaflets ovate, petioled, the middle ones twice the size of the others. Peduncles axillary,

* Vahl. * Linn. suppl. † Loureiro. ‡ Linn. zeyl.
 * Retzius. † Swartz.

^c Loureiro. ^d Swartz. ^e Loureiro and Linn. zeyl.
^f Loureiro. ^g Burm. ind. ^h Linn. spec. ⁱ Sloan.
 ^k Linn. mant. ^l Browne.

folitary, shorter than the petioles. Flowers white. Legumes compressed, even, bowed back.—Native of India^m, Tanna, and New Caledonia.

30. Leaves like those of Trefoil, with ovate-oblong, smooth leaflets, almost equal. Flowers in spikes. Legumes villose, usually composed of two round joints. Native of Indiaⁿ, and China.

31. Stems suffruticose, prostrate, pubescent, round, the thickness of a pigeon's quill, very much branched. Leaves on very short petioles: leaflets sessile, thick, villose, small, having a reflex point at the end; the lateral ones smaller. Stipules minute, awl-shaped. Flowers on short peduncles, solitary, seldom two together. On each peduncle an awl-shaped bracte. Calyx villose, with awl-shaped segments. Banner and keel double the length of the calyx: wings linear, of the same length with the calyx. Germ villose. Legume half an inch long; joints orbicular, compressed, villose, with stiff bristles, reflex and hooked at the end^o.

32. Stems round, hardish. Stipules acuminate, ending in a bristle. Leaves petioled: leaflets ovate-oblongish, blunt, on petioles, the middle one more produced. Spikes of flowers narrow. Lower legumes of one joint only, the rest of more, waved on one side. There is a variety which is more procumbent, with blunter leaflets: the lowest legumes of this are not always one-jointed^p.

Stem herbaceous, streaked, smooth, drooping, two feet high and more. Leaves smooth: leaflets oblong, blunt with a point, entire, nerved, pale underneath, spreading very much, an inch in length, the middle one larger and on a longer petiole. Flowers in racemes, flesh-coloured. Racemes axillary, frequent, spreading and drooping^q.

Native of Ceylon, China, Japan, and the Society Isles.

33. Stem shrubby. Leaves on longish petioles: leaflets broad, from round inclined to rhomb-shape, the middle one twice as large as the others. The upper branches are hispid with spreading, viscid hairs. Legumes oval-oblong, membranaceous, blunt at both ends, neither of the futures sinuate, but both entire^r. Native of India.

34. It grows in tufts, and seldom rises above fifteen or seventeen inches from the root.—Native of Jamaica and Hispaniola^s.

35. This is an upright plant, and mostly smooth. Stem streaked and angular. Leaflets lanceolate. Stipules awl-shaped^t. Perennial.—Native of Virginia and Canada. Flowering in July and August. Cultivated in 1640, according to Parkinson^u.

36. Root branching, perennial (biennial, *hort. kew.* annual, *Swartz obs.*). Stem shrubby, three feet high, wand-like, upright, very smooth, round, without knots. Leaves alternate, petioled, hanging down or spreading, often vertical, sometimes simple but usually ternate, especially in adult plants: the middle leaflet lanceolate, long, flat, quite entire, very smooth, veined; the side ones very small, and seeming rather to be appendices than leaflets; they are on short petioles, which are remarkable for a motion peculiar to them. The common petiole is spreading, half round, shorter than the leaf, and villose. Stipules lateral, upright, awl-shaped, ferruginous, deciduous^x.

Racemes terminating and axillary, rather simple, many-flowered, long, leafless, pubescent. Flowers nodding. Bractes solitary, membranaceous, cordate under the flowers, deciduous. Calyx erect, two-lipped; upper lip trifid, lower with two smaller contiguous teeth. Banner of the corolla largish, roundish, entire, brown with dusky streaks; wings connected with the keel by their upper edge, brown; keel longer than the wings, bifid at the base and tip, compressed, ferruginous. Legume on a short pedicel, compressed, channelled at the back, crenate in front, gaping, containing five or six, kidney-form, oblong seeds^y.

The leaves are of a bright green, with the middle

part of a more glaucous appearance than the rest. Flowers pale red, slightly tinged with blueish, and sometimes yellowish^z.

The singular motion with which the lateral leaflets or appendices of this plant are endued is thus described in Linneus's supplement:

"This is a wonderful plant on account of its voluntary motion, which is not occasioned by any touch, irritation, or movement in the air, as in Mimosa, Oxalis and Dionæa; nor is it so evanescent as in Amorpha. No sooner had the plants raised from seed acquired their ternate leaves, than they began to be in motion this way and that; this movement did not cease during the whole course of their vegetation, nor were they observant of any time, order or direction; one leaflet frequently revolved, whilst the other on the same petiole was quiescent; sometimes a few leaflets only were in motion, then almost all of them would be in movement at once: the whole plant was very seldom agitated, and that only during the first year. It continued to move in the stove during the second year of its growth, and was not at rest even in winter."

Swartz observes that the motion is irregular, and that it sometimes ceases entirely; that in a very hot day it is immovable, being agitated only in the evening, and that slowly.

In our climate the leaves in general only make a faint and feeble attempt towards the middle of the day at exerting their extraordinary faculty^a.

We are at a loss to account for this motion, which does not depend upon any external cause that we can trace, and which we are not able to excite by any art that we possess. It is not the action of the sun's rays, for this plant is fond of shade, and the leaves revolve well on rainy days, and during the night: exposed to too much wind or sun, it is quiet. Perhaps, says Linneus, there may be some part in vegetables, as in animals, where the cause of motion resides^b.

It is a native of Bengal near the Ganges: and is called there *Buram Chadali* or *Burram Chandali*. It grows luxuriantly, and flowers, in the gardens at Jamaica. It was introduced here in 1775, by Patrick Russell, M.D. and flowers in July and August^c. Forster sent the seeds to Linneus in 1778.

37. This resembles *H. canadense* very much. It is an upright, hairy plant. The leaflets are ovate. Stipules awl-shaped, subcordate. Flowers white.

Native of Virginia^d.

38. Stem woody, round, purplish, pubescent at top. Leaflets on a short petiole, ovate, unequal; the lateral ones smaller, oblique on one side; the end one somewhat rhomb-shaped, an inch and half long, almost double the size of the others, all repand-crenate from the middle upwards, blunt, mucronate, paler underneath, villose on the veins. Petioles two inches long, pubescent, jointed and thicker at the base, with two bristle-shaped scales between the leaflets. Stipules lanceolate, ciliate. Peduncle terminating, erect, half a foot long. Flowers very remote, purple, before they open drooping. Pedicels two or three at each joint, capillary, pubescent, an inch long, somewhat clammy. Calyx pubescent. Wings lanceolate, shorter than the keel. Legume linear.

Native of Arabia.

39. Stems weak, simple, three-sided, somewhat hairy. Leaflets petioled, an inch long, the side ones smaller, having long hairs thinly scattered over both surfaces, and pressed close to them. Petioles an inch and half long, hairy. Stipules semicordate, nerved, ciliate, acuminate. Racemes two or three inches long. Pedicels alternate, remote. Bractes lanceolate, nerved, ending in a dagger-point that is scarcely pungent. Legumes an inch long, erect, a little incurved; joints oblong, covered with hooked hairs. It may be doubted whether it be different from *H. trigonum* (28).

Native of the West Indies^e.

40. Root perennial. Stems several, as thick as a small quill, eighteen inches or two feet and upwards

^m Linn. zeyl. ⁿ Ibid. ^o Vahl. ^p Lin. zeyl.
^q Thunberg. ^r Linn. zeyl. ^s Browne and Swartz.
^t Linn. syst. ^u Hort. kew. ^x Linn. suppl.
^y Swartz.

^z Shaw. ^a Ibid. ^b Linn. suppl. ^c Hort. kew.
^d Linn. mant. ^e Vahl.

in height, round, smooth, stiff, upright, with alternate leaves from top to bottom, like those of *Trifolium bituminosum*, but blunter, pale underneath and covered with soft hairs, especially on the upper and young leaves, which are hoary with a silky down: the middle leaflet is larger and broader than the others, inclining to rhomb-shaped: petioles slender and short, with a pair of stipules at their base and on the middle pedicel. Flower-stems squarish and roughish, with small flowers distant from each other in two long rows on short slender peduncles. Corolla purple fading to blue: banner broadish, first concave then spreading, having a greenish spot at the base; wings applied to the keel, of a purple colour; keel compressed, whitish towards the base. Calyx divided into four short segments. Legumes short, compressed, not rough, but slightly hirsute, with some oblique veins.

Native of Virginia, Carolina, Maryland. Cultivated in Dr. Sherard's garden at Eltham in Kent, in 1725; it flowered there the beginning of October, 1729^f.

41. It grows erect, and rises generally to the height of two feet and a half or more. The leaves are moderately large, and the stipules are roundish and broad. Flowers in spikes thinly placed, on pedicels half an inch long; corolla of a pale purple colour. Legumes slender, rough, variously turned and distorted.

Frequent in the more remote hills, and inland parts of Jamaica^g, and Santa Cruz, also in Vera Cruz; whence it was sent by Dr. Houstoun. It flowers here in July and August; and was cultivated by Mr. Miller in 1731^h.

Vahl, who describes this, has another species sent by Pflug from the same island of Santa Cruz, which he calls *H. molle*. It resembles the tortuosum, but has a stronger stem, with larger leaves, softly villose underneath, the younger ones on both sides, not at all spotted: pedicels aggregate, often four or five: the legumes are double the size, with the last joint very large in comparison with the restⁱ.]

42. Stems woody, trailing, a foot and half long, sending out several branches on each side. Leaflets small; pale green. Flowers small, of a pale purplish colour. Legumes narrow; each joint four-cornered, containing a single, small, compressed seed. Annual. Native of Jamaica.

43. Root perennial. Stems two or three shrubby, hairy, near two feet high, branching on every side near the top. Leaves ovate-lanceolate, hairy underneath, on short foot-stalks. Flowers at the ends of the branches in short spikes, purplish-yellow and small. It was sent by Dr. Dale from South Carolina.

[Jacquin thus describes his *H. frutescens*, which is probably a different plant. Stems several, round, shrubby, perennial, wand-like, several feet in length, branched; the younger ones villose, procumbent or supporting themselves. Leaves alternate, on villose petioles; leaflets suboval, blunt, quite entire, villose underneath, almost smooth above; at the bottom of the stem often rounded. Stipules to the leaf lanceolate-acuminate; to the leaflets bristle-shaped and caducous. Racemes terminating, loose, half a foot long and more. Pedicels in pairs, spreading, each one-flowered. Flowers purple, small, without scent. Calyx villose; upper lip semibifid, lower trifid, the segments acuminate, erect. Banner very widely ovate; wings and keel oblong. Legume an inch long, very much compressed, brown, rough, five-jointed.

44. This runs many feet from the main roots, commonly casting a few fibres from all the joints that touch the ground, which greatly forwards its luxuriant growth. The leaves are marked with some prominent veins on the under side, and are seldom less than an inch and half in length.—Common in the shady hills of Jamaica^k, and Domingo.

45. Native of North America. Introduced in 1787, by Thomas Walter, Esq. Perennial^l.

46. Spikes oblong. Legumes of one joint, ovate, acute. In gardens, the first year it bears mutilated

flowers, and yet is fruitful. The second year the corollas are white.—Native of Virginia^m.

47. Root perennial. Stem herbaceous, two feet high, rushy, wand-like, round, somewhat furrowed, smooth, somewhat pubescent towards the end; branches of the same length and structure with the stem, alternate, few. Leaves alternate, petioled, reflex: leaflets petioled, smooth; quite entire, bluntish with a point, the two lower on shorter petioles; these are the length of the leaflets. semicylindric and smooth. Stipules permanent, subulate, at first erect then spreading, very short, purplish. Racemes axillary, few-flowered (at most eight), leafless, a little longer than the leaves, peduncled. Peduncles twice as long as the petioles, filiform, smooth. Flowers in pairs, erect, pedicelled. Bractes small, ovate, scarcely visible. Calyx segments sharp, the three upper approximating, the two lower divaricating. Corolla white; banner broad, roundish, scarcely emarginate with blood-red streaks at the base; wings ovate, rounded at the tip; keel bifid from the tip to the middle, the lobes rounded. Legume ovate, compressed, mucronate, one-seeded, scarcely larger than the compressed calyx. Seed yellowish, oblong, the size of the legume.—When the plant first grows up in the spring, the stems are more pubescent, in greater number, more simple, purple and almost blood-red; in the summer they are green; the lower leaves are simple not ternate, and purplish.

Native of Indiaⁿ.—Linneus received the seeds from David van Royen in 1761. It was introduced here in 1776, by Monf. Thouin: and flowers in July and August^o.

48. Flowers violet-coloured, in pairs, usually connected by their proper pedicels, in some glomerate from the axils of the leaves, in others fixed here and there on filiform peduncles. Legumes three times as long as the calyx, sharp, smooth, netted, containing one seed^p.

Native of North America.—Introduced in 1787, by Thomas Walter, Esq.^q

49. Flowers purple^r.—Native of Virginia. Introduced in 1781, by Monf. Thouin^s.

50. Flowers purple^t.—Native of Virginia.

51. Clayton describes the American plant to have procumbent woody stems; smooth leaves; flowers variegated red and white, or sometimes white only, on long upright axillary peduncles, disposed in a small spike; legumes short, acuminate, smooth, compressed, containing one very small ovate seed^u.—Dillenius thus describes the Ceylonese plant, which is probably different from the Virginian.

Annual. Stems many, slender, from a long span to a foot and a foot and half in length, round, red, hairy. Leaves at first single, afterwards mostly ternate, roundish, like those of Strawberry-Trefoil, sometimes obcordate, sometimes not, thickish, frequent, smooth above, somewhat hoary underneath, on slender hairy petioles; at their base a pair of broadish stipules, and another pair at the base of the leaves, which are slender. The flowers come out towards the end of the stalks, sometimes single, sometimes two, three or four together, on extremely slender pedicels; they are small and purplish; the calyx is divided into five narrow, hairy segments. Legumes short, brown, with slender transverse wrinkles, rather smooth however than rough, with some fine hairs about the edge. Seeds smooth, greenish ash-colour with black dots^x.

Native both of the East and West Indies.—Dillenius says, that it grew in the Eltham garden from Ceylon seeds, sent by Commelin.—Miller received the seeds by Dr. Houstoun from the Havannah: They cultivated it therefore about the same time: It flowers in July, and sometimes perfects seeds in August or September.

52. Root long, deep. Stems many, round, hairy, from seven or eight inches to a foot in length, creeping, branched. Leaflets small, smooth, shining, ciliate, having many beautiful white nerves on the under sur-

^m Linn. spec. and syst.

ⁿ Linn. dec.

^o Hort. kew.

^p Linn. spec.

^q Hort. kew.

^r Linn. syst.

^s Hort. kew.

^t Linn. syst.

^u Gron. fl. virg.

^x Hort. elth. 172.

^f Dillenius.

^g Browne and Sloane.

^h Hort. kew.

ⁱ Symb. 2. 83.

^k Browne.

^l Hort. kew.

face. The flowers come out towards the top; they are of an orange colour, with a little purple in the middle. Legume small, rough, seldom exceeding two lines in length, never containing above one seed, which is reddish.—Native of Jamaica^y, Hispaniola, and Ceylon.

Swartz makes this species to be of a genus totally distinct, and even very different from all the others of this class; because it has a corolliferous calyx, and an inferior germ, in the same manner almost as *Oenothera*.

β. Stems from one to two feet in length, shrubby, gray, branched into many twigs, which are green and hoary. Leaflets purple on the edge, having purple spots on their backs, and a down of the same colour; petioles half an inch long. Flowers on the tops of the twigs, yellow, several opening successively. Legume very short, thin, shaped like a scymitar, having several lines or nerves on it, containing one seed, which is shining, brown, with a point on one side and defect on the other^z.

Native of Jamaica, and Ceylon, for this seems to be Burman's plant.—Swartz makes this a distinct species, under the name of *Stylosanthes viscosa*.

53. Roots simple, long. Stems filiform, crowded, when magnified appearing three-cornered, subdivided, pubescent. Leaves alternate. Petioles short. Stipules opposite, acuminate, membranaceous, at the base of the petioles. Leaflets roundish, obcordate or slightly emarginate, small, nerved, netted, smooth above, glaucous underneath. Peduncles opposite to the petioles, simple, solitary, two or at most three together, the length of the petioles; filiform, one-flowered. Flowers minute, scarlet. Calyx two-lipped; the three hinder segments linear, contiguous, sharper, the two in front distant, lanceolate. Banner of the corolla roundish-cordate, spreading, reflex, pale; wings and keel shorter than the banner, approximating, scarlet. Legume small, peduncled, crenate in front, containing three or four seeds, which are roundish and minute.—It wakes at ten o'clock in the morning, and sleeps at four in the afternoon^a.

Stem annual, round, short, in tufts. Leaves obcordate, smooth, small, petioled. Flowers white, on one-flowered, heaped, axillary peduncles. Legumes bowed, containing several seeds^b.

Native of both Indies and China.—The Eastern cannot be distinguished from the West-Indian plant^c. And yet the descriptions do not perfectly agree.

β. Stems scarcely half a foot long, hispid. Leaflets obcordate, both they and the petioles hispid and naked. Stipules ovate, sharp, streaked. Peduncles the length of the leaf, axillary, solitary, one-flowered, opposite to the leaves. Flowers small. Calyxes hispid. Legumes sometimes of one joint, sometimes of several, with one edge entire^d.

Native of Ceylon and China.

54. Stem procumbent, from three to five inches in length, branched, round, somewhat shrubby at the base, even: branches procumbent, almost simple, short, round, pubescent. Leaves petioled. Petioles alternate, thicker at the base, filiform, short, round a little flattened, smooth. Leaflets obovate, petioled, the middle one double the size of the two others, entire, somewhat glaucous above, hoary on the back. At the tips of the leaves are very short little bristles. Stipules opposite, at the base of the petioles, sessile, lanceolate, sharp. Flowers terminating, in a sort of spike, comose. Peduncles long, two, approximating, filiform; the flowers nodding, pale blue. Calyx subbilabiate; the two upper segments approximating, the tips linear, hirsute; the three lower ones distant, parted to the base, lanceolate, hirsute, whence there is a broad hirsute spike. Banner of the corolla spreading at top, roundish; wings lanceolate, blunt: keel ovate, bowed in, spreading. Legume lanceolate, bent variously, bowed in: joints roundish, smooth. Seeds roundish, compressed.—Native of Jamaica, in the dry sandy parts^e.

55. Stem undershrubby, upright, two feet high,

round, hispid: with diffused branches. Leaves ternate, sometimes quinate; leaflets ovate-lanceolate, smooth, (blunt, naked, terminating in a very small bristle, *Lin. spec.*). Stipules lanceolate, minute. Flowers dark purple, in oblong, dense, very hirsute, terminating spikes. Bractes roundish, acuminate, two-flowered, deciduous. Peduncles one-flowered, long, bent in, hirsute. (Calyx very short, the segments ending in three hirsute bristles, *Lin.*), converging, and concealing the corolla with many long hairs. (Corolla small, *Lin.*) Legume linear, coloured (even, having three or four joints, *Lin. syst.*) which are drawn back and plaited. Seeds flattened, brown, even, small^f.

Native of China, and New Caledonia.—Loureiro remarks that Burman's figure does not agree with his observation, in the number and form of the leaves.

56. Stem filiform, purple: branches alternate, frequent, upright, like the stem, subdivided: twigs capillary, short, reflex, almost covered, as well as the branches, with stipules. Leaves petioled: leaflets acute, entire, nerved, the upper surface smooth, the lower villose and pale: the middle leaflet on a long petiole, the side ones on shorter. Petioles capillary, purple, smooth. Stipules sessile, ovate, awl-shaped, membranaceous, frequent. Flowers on capillary pedicels, alternate, or subdichotomous, flexuose; purple, hispid. Calyx hirsute. Corolla purple. Legumes of three joints, villose-scarious.—It differs from *H. stipulaceum* in its frutescent, upright stem; in its ovate, acute, villose leaves; in having the flowers growing in a kind of raceme:—from *H. marilandicum*, in its scarious legumes:—from *H. frutescens*, in its smooth stem: and from *H. repens* in having the racemes terminating.—It flowers in august and september.—This and the following species are natives of Japan:

57. Stem smooth: branches alternate, angular, smooth, purple, upright. Leaves alternate, petioled: leaflets petioled, the middle one on the longest, ovate-oblong, acute, entire, spreading, hoary underneath, the middle one twice as large as the two others: petiole filiform, smooth, an inch in length: stipules two, bristle-shaped, half a line long, between the two side leaflets, and below the odd one. Racemes a hand or more in length, from upright-spreading, capillary, smooth, often several: pedicels solitary or in pairs, one-flowered, very short, capillary. Calyx and corolla smooth. Legumes compressed, acuminate, even. It resembles *H. viridiflorum*; but differs in having axillary, not terminating racemes; legumes sharp and smooth, not blunt and rough; and bristle-shaped stipules on the upper part of the common petiole.

58. Stem upright, smooth, simple, a foot or more in height. Leaves petioled, upright: leaflets acute, entire, nerved, the middle one larger and on a longer petiole than the two side ones: petioles semicylindric, channelled: stipules two, at the base of the petiole, between the side leaves, and below the odd one; they are bristle-shaped. Calyx hirsute. Corolla purple. Legume almost linear, with a ferruginous down on it.—It resembles *H. gangeticum*, but is distinguished from it by the ternate leaves in this.

59. The whole plant, except the upper surface of the leaves, is tomentose. Stem herbaceous, angular, flexuose, upright, a foot or more in height. Leaves petioled: leaflets ovate-oblong, blunt with a point, entire, edged, marked with lines and nerves; the side ones on very short petioles, only half the size of the middle one, which is an inch in length: petiole furrowed, upright, an inch long. Stipules two, at the base of the petiole, broad at the base, bristle-shaped.

60. Stem many-streaked, upright, villose at the corners, two feet high and more: branches alternate, very frequent, wand-like, upright, subdivided a little, resembling the stem. Leaves very frequent, on short petioles, silky-tomentose on both sides: leaflets oblong, tapering at bottom, retuse with a point, subsessile, upright, half an inch long, the middle one longest. Stipules bristle-shaped. Flowers on very short peduncles. Calyxes silky-tomentose.—It differs from *H. striatum*, in having the stipules bristle-shaped, not pressed

^y Sloane and Browne.

^b Loureiro.

^c Swartz.

^z Sloane.

^d Retzius.

^a Swartz.

^e Swartz.

^f Loureiro.

close; the leaves longer, retuse, silky, not streaked; the stem upright and stiff, frutescent. It flowers in September and October.

61. Stem herbaceous, with hairy angles, upright, purplish: branches alternate, filiform, angular, hairy, from erect-spreading, wand-like. Leaves on very short petioles: leaflets also on very short petioles, ovate, entire with the edge reflex, marked with lines; the upper surface green and smooth, the lower pale and hairy; the middle one largest. Flowers axillary; peduncles hairy, three-flowered at the tip, from spreading reflex, an inch long.

62. Stem herbaceous, filiform, very hairy: branches few, alternate, short, resembling the stem. Leaves petioled, villose on both sides: leaflets on short petioles, blunt with a bristle-shaped point, spreading; the odd one a little larger and on a longer petiole than the two side ones. Each raceme has about four flowers. Peduncle capillary, scarcely the length of the petiole. Corolla purple.—It flowers in September.

63. Stem angular, hairy, rather upright though weak, a foot high and upwards: branches alternate, wand-like, frequent, spreading, simple. Leaves on short petioles: leaflets blunt, somewhat retuse, acuminate with a small bristle, entire, with parallel streaks, smooth except the dorsal rib, which is hairy, the middle one hardly larger. Stipules at the base of the petiole, ovate, membranaceous, ferruginous, pressed close. Flowers single, on very short peduncles from the axils of the leaves. Calyx hairy. Corolla purplish^s.

All these are natives of Japan.

64. Root perennial. Stems ramping, six feet high and more, slender, not thicker at bottom than at top, round, finely haired, twining from left to right, having joints distant from each other a hand or a span; at every one of these is a trifoliate leaf, on long, slender, smooth petioles; leaflets blunt, veined, deep green and shining on the upper surface, paler and somewhat glaucous on the under, with a down scarcely visible except in the young leaves: petiolules of the side leaflets very short, of the middle one longer, with a pair of minute stipules under the leaflet. Spikes of flowers axillary, on very long, slender, smooth peduncles: flowers distant, two or three together, generally opposite: banner broadish, first concave, then flat and bent back, with a greenish spot at the base: wings of a middling length, applied to the keel, which is compressed and cuspidate; the whole of a very lively purple, except the hinder part of the banner, which changes to an obscure dun colour. Calyx divided into four segments, of which that next the banner is somewhat broader than the rest^h.

Native of North America. Cultivated in Dr. Sheard's garden at Eltham at least as early as 1727, probably some years sooner, about 1724.

Perhaps *H. scandens* of Miller n. 13. (89.) which he received from La Vera Cruz by Dr. Houstoun, may be the same with this.

65. This resembles *H. lineatum* in many respects, but the leaves are more acute, silky-tomentose all over the back and on the edge of the upper surface, they are also darker. All the nerves underneath, with the midrib above are very tomentose. Flowers small, sessile, in a peduncled axillary umbel. Angles of the branches tomentose. Petioles ciliate. Stipules filiform.—Thunberg gathered it in Javaⁱ.

66. Leaves radical, with leaflets from seven to nine, equal, ovate. Scapes the length of the leaves or higher, somewhat tomentose, white. Spike terminating. Calycine leaves near the length of the corolla, which is violet-coloured or white, with the wings shorter than the banner. The legume consists of two or three lanuginous joints, enveloped in the dry flower.—Native of Siberia. Perennial^k.

67. Stem straight. Stipules short. Leaflets seventeen, ovate-lanceolate^l.—Stem somewhat shrubby, four feet high, round, simple, branched. Flowers yellow in small, upright racemes. Legume linear, straight, slender, long^m: membranaceous, leafy-compressed;

joints from two to four, ovate, smooth, netted, separating but not opening spontaneously. Seeds many, oblong kidney-shaped, ferruginousⁿ.—Native of Siberia and CochinChina.

68. This plant commonly attains only the height of from two to six inches or a little more, seldom being found a foot high; hence differing materially from the *H. alpinum* of Linneus, which reaches the human stature. Root perennial, creeping. Stem annual, seldom branched, upright, terminated by a raceme. Root-leaves on the flowering plant none. Stem-leaves few, alternate: leaflets from three to eight on each side, with an odd one, ovate-oblong, blunt with a small point, entire, opposite, on short petioles, hirsute underneath when viewed with a magnifier, marked with lines by veins ascending obliquely. Stipules lanceolate, membranaceous, clasping, subaxillary, brown, often cloven above the middle into awl-shaped segments; those which are below the leaves are subimbricate and sheathing. Flowers eight lines in length, imbricate, pendulous, on short peduncles, varying in number, having no scent. Lower segments of the calyx gradually longer. Corolla violet-purple or red, seldom white: banner spotted with white above the claw; that and the wings nearly of the same length; the keel shorter. Germ commonly red. Legume oblong, compressed, smooth, brownish, with from one to four roundish or oblong joints.

Native of the higher Alps, where it flowers in July^o.

Linneus named this species from the obscurity attending it: that however has been well cleared up by Professor Jacquin as above. Linneus, in mantissa, remarks, that the stem is flexuose. Stipules stem-clasping, an inch long. Leaflets exactly elliptic, mucronate, with a little bristle.

Plant, according to Flora Aragoniæ, suffruticose. Leaflets ovate. Stipules sheathing. Peduncles longer than the leaves. Flowers in racemes, purple, with a flattened keel, broader outwards.

Haller makes this the same plant with *H. alpinum*; but Linneus's specimen from Switzerland is very well represented in Haller's figure, and it is certainly a species very distinct from the *H. alpinum* of Siberia.]

69. Root biennial. Stems from two to three feet high, hollow, smooth, branching. Leaves composed of five or six pairs of oval leaflets, terminated by an odd one; they are alternate, and from the angles which they form with the stem and branches, peduncles come out five or six inches in length, sustaining spikes of beautiful red flowers, which open in June and July, and perfect seeds in September, after which the roots commonly decay; but if the plants be cut down before they seed, they will last longer.

[Legume oblong, a little flattened. Joints three or fewer, roundish, with a crenulate border; covered with a thin fungous bark, muricated on the outside with short little prickles. The proper laminas are of the consistence of paper, smooth, scarcely opening spontaneously, but separating by joints.—*H. flexuosum* and *grandiflorum* have also their joints covered with a bark; in other species they are simple^p.—Native of Spain and Italy. Ray observed it in Sicily. In Calabria it grows wild in great luxuriance, near four feet high, affording excellent nourishment to horses and mules, both green and made into hay: but it does not well bear the spring in the north of Italy: we may presume, therefore, that it will scarcely bear our climate well enough to answer the purposes of husbandry.

Osbeck mentions, that he saw it brought into Cadiz in great bundles, as food for the cattle. In German, French, Italian and Spanish it has the name of *Sulla*; in German it is also called *Kronencklee*, *Schildklee* and *Spanische Klee*. In French *Sainfoin d'Espagne*, and *Sainfoin à bouquets*. In Dutch *Sierlyk haanekop*.

Parkinson calls it *red Sattin-flower*, or *red-flowered Fitchling*, and observes that some foolishly call it, *red* or *French Honeysuckle*: the foolish name, however, has obtained in English. He informs us (1629) that the variety with a white flower grew at Stubbers by North

^s Thunberg. ^h Dillenius. ⁱ Retzius. ^k Linn. suppl.
^l Linn. syst. ^m Loureiro.

ⁿ Gærtner.

^o Jacquin.

^p Gærtner.

Okenden, in the garden of Master William Coys, a gentleman of good respect in Essex, a great and ancient lover and cherisher of these delights, and of all other rare plants.

It was cultivated in 1596, by Gerard^a.]

70. This has some resemblance to the foregoing, but is much smaller. The stalks rise near a foot high, and the leaves are composed of two or three pairs of ovate leaflets terminated by an odd one. The flowers come out in spikes at the top of the stalks, and are of a pale red, intermixed with a little blue. They appear in July, and are succeeded by jointed pods, which are waved on both sides, forming an obtuse angle at each joint; the seeds ripen in autumn. It is an annual plant, and grows naturally in the Levant.

Cultivated by Mr. Miller, in 1739^r.—It grew in the Oxford garden (1671) from seed sent from Aleppo, by Mr. Huntington^s.

71. Root perennial. Stems half a foot in length, usually with one branch and leaf only. Leaflets obovate-oblong, villose underneath. Spike ovate. Calyx hirsute, shorter by half than the corolla, ending in bristles. Corolla like that of *H. coronarium*, but smaller: banner of the same length with the keel; wings much smaller, not above one third of the length. Legumes of two joints usually. Gerard will have it to be a variety of *H. pumilum*, but he is wrong^t.

Native of the South of France and Spain. Ray found it in Sicily, in a small island near Capo Passaro. —It appears from Parkinson, that it was cultivated here in 1640. It flowers in July and August. Annual^u.]

72. This is an annual plant. Leaflets four or five pairs, with an odd one, narrow and oblong. Stem terminated by small spikes of purple flowers, which are succeeded by small rough legumes.

[The legume has generally two orbicular joints, equally prickly^x. Native of Spain and Portugal. Cultivated in 1731, by Mr. Miller.

73. Stem upright, three feet high, with ascending branches. Leaflets oblong, blunt, small, many. Flowers violet-coloured, in terminating spikes. Legume slender, with roundish, flattened seeds^y. Native of Virginia and CochinChina.

74. Leaflets from nine to twelve, remote, petioled, hoary. Racemes few-flowered, shorter than the leaves. Corollas purple. Legumes flattened, with the joints wrinkled and netted.—It is a very handsome plant, grateful to horses, and extremely useful in fixing driving sand. Native of Siberia^z.

75. A small shrub, only a hand in height. Leaves the length of the stem, with oval-oblong leaflets. Spike smooth. Banner only half the length of the keel, which is very large, broad and blunt. Calyx even, with very short, awl-shaped teeth. Native of Spain^a.

76. This is an elegant plant, a foot in height, with a perennial root. Stems several, herbaceous, quite simple, the thickness of a pigeon's quill, striated-angular, erect, very hairy; hairs white, long, soft, spreading very much. Root-leaves simple, petioled, elliptic; the next ternate; stem-leaves unequally pinnate, with three or four pairs of leaflets, which are an inch long, equal, opposite, lanceolate, mucronate, above very hairy, hoary green, beneath silky. Stipule ovate, membranaceous, purple, bifid, with lanceolate, acuminate segments. Spike silky, shining, many-flowered; several radical, sessile, or on very short peduncles, flowering first; those on the stem have very long peduncles, nodding before the flowers open. Flowers crowded. Cauline peduncles axillary, elongated, higher than the stem, tomentose-hoary at top. Bractes ovate, acuminate, purple-ash-coloured, green at the base, softly hairy, especially on the back and at the edge, concave, smooth within, twice as long as the calyx. Calycine segments bristle-shaped, brown, three times as long as the base, upright, almost naked at top, but covered with long, close, white hairs at bottom. Co-

rolla purple, half the length of the calyx: banner orbiculate; wings minute; keel shorter than the banner. Germ orbiculate, very hairy at the base, villose-gray at top. Legume roundish, scarcely so big as a pepper-corn, wrinkled. Native of the Levant and Barbary^b. See *Ebenus pinnata*, and n. 86.

Saint-foin.

77. Root perennial. Stems round, striated, at first procumbent, in flower ascending. Stipules in pairs, oval-lanceolate, terminated by a long point, with membranaceous edges, sometimes fringed with a few hairs. Petioles furrowed above, slightly hairy. Leaflets eight to ten pairs, rather distant, and an odd one; lower elliptical, upper lanceolate or linear-lanceolate, all with a projecting point; young ones with the midrib beneath, and the margins fringed with hairs. Peduncles long, slightly hairy, bearing numerous flowers in a long spike, thickly imbricate upwards, each with an awl-shaped bracte, longer than the pedicle. Calyx short, hairy, one fourth of the length of the flower, with five nearly equal awl-shaped teeth. Corolla: standard oval, slightly emarginate, partly bent back, shorter than the keel, flesh-coloured, striated with red veins; wings not longer than the teeth of the calyx, hooked near the base, pale flesh-colour; keel broad, bent with an obtuse angle at the top, flesh-coloured, with a deeper red beneath. Legume hemispherical, compressed, with wrinkled prominencies^c.

Native of England, France, Flanders, many parts of Germany, as the Palatinate, Bohemia, Silesia; in Austria, Carniola, Switzerland, Savoy, Italy, Spain, Siberia; on hilly pastures, and open downs, particularly in a calcareous soil. Flowering in June and July. With us, on Gogmagog hills, Newmarket heath, about Royston, in Norfolk, on Salisbury plain, &c. Cotswold hills, and on all our calcareous hills in general.

It is much cultivated in several parts of Europe, in dry soils, for feeding cattle: with us in Cambridgeshire, Hertfordshire, on Epsom downs, Cotswold hills, about Malton, &c. in Yorkshire, and other hilly situations and calcareous soils. It yields great abundance of excellent fodder, but is supposed to be much sooner damaged by rain, when cut, than any other sort of plant, usually mown for hay.

The old English names were *Medick Vetchling* or *Cock's-head*. The modern name of *Saint-foin* came from France, whence we originally had the seed.

In German it is Esparzette, Esper, Sparfette; der gemeine Sufsklee, Hahnenkopf, Hahnenkamm, Hahnenkammklee; groffer Turkischer Klee, Turkischer Kleberklee, Schweizerklee, Wickenklee, Eselswicken, Heiligheu, Stachelheu, Stachelahre, Wiedhopfenkraut, Gurtriemen, Frauenspiegel, rothe Ramsen, Sainfoin. In Dutch Haanekammetje's. In Swedish and Danish Esparfet & Sainfoin. In French, Sainfoin, Saintfoin, Esparcette, Foin de Bourgogne. In Italian Cedragola. In Spanish and Portuguese Phipirigallo.

Parkinson says, (1640) it is known generally to be a singular food for cattle to cause them to give store of milk.

Hartlib (1651) says we are to blame, that we have neglected Clover-grass, Saint-Foine, Lucerne. He complains, that we want a place where we can find these seeds.

Walter Blith, in his English Improver Improved (1653), speaks of it as a French grass very little known, upon which he had not made a full experiment himself, having only sown it that year, but as having been sown in divers parts of England, as Cobham park in Kent, &c. upon chalky dry banks.

By a pamphlet printed in 1671 entitled "St. Foine improved," it appears, that divers places in this kingdom then already in part had received great benefit, and were likely to receive more, by the improvement of dry and barren ground, from sowing of St. Foine.

Morison (1672) relates, that it may be cut three times in a year, that it is a food very grateful to cattle, that it delights principally in dry, sandy and gravelly soils, and that its roots will penetrate among rocks, thriving and covering the ground where there is scarcely

^a Hort. kew.

^r Ibid.

^s Morison.

^t Linneus.

^u Hort. kew.

^x Linn. syst.

^y Loureiro.

^z Linn. suppl.

^a Linn. mant.

^b Vahl.

^c Woodw. Mss.

any earth; that it flowers in april on the Apennines, in may in Provence, in july in Brabant and Flanders, where it is frequently wild, and where many fields are sown with it.

Ray (hist. 1686) informs us, that it began not long since to be sown among us for feeding cattle, to the very great advantage of many: that it furnishes abundance of milk, whence it was deservedly called *Polygon* by Gesner; and that, as it delights in a dry, chalky soil; not favourable either to grass or corn, it may be cultivated to great advantage.

From these passages we may infer that St. Foin was very little, if at all cultivated in 1651, that it probably crept in about that time, or soon after, and that in twenty years from this time it was pretty well established, though by no means generally till towards the end of the last century: when Houghton, in his collection (p. 144. vol. 2.) says, that the cattle now (1697) live plentifully on the St. Foin growing on Epfom downs, which was formerly reckoned very barren ground. At the beginning of the present (1703) Lisle speaks of it as commonly cultivated.

Mr. Marshall, indeed, informs us, that it is said (1789) to have been cultivated on the Cotswold hills upwards of 150 years, which carries us back to 1639, a period somewhat earlier than I believe Saint-foin to have been cultivated in England, till I find better authority than mere tradition.

This important species, with several others of the genus, which in former editions stood under the name of *Onobrychis*, is wholly omitted in the eighth edition of Miller's Dictionary, wherein probably the author intended to have removed them to the article *Hedysarum*.

78. Stems under ground woody, above ground scarcely any. The spike resembles that of the foregoing species, but is whitish. Wings of the corolla scarcely longer than the calyx, or shorter than the standard and keel. Leaflets linear^d, somewhat hoary and acute, twelve to fifteen pairs, the lower ones more distant; petioles striated. Stipules lanceolate, sharp, bifid, smooth, decaying. Peduncles longer than the leaves, naked, striated. The lower flowers in the spike remote, the upper ones close. Calyx equal, with long, bristle-shaped segments^e.

Native of Provence, the county of Nice, and Siberia. Perennial.

79. Root perennial. Legume has equal, sharp spines along the keel^f.—Native of France and Sicily. Cultivated in 1748, by Mr. Miller. It flowers in july and august^g.

Root white, annual. Stems procumbent. Leaflets linear, acute: peduncles very long: flowers in spikes. Segments of the calyx bristle-shaped, villose. Flower twice as long as the calyx; banner ovate, retuse; keel shorter than the banner; wings very small, scarcely the length of a line, one fourth of the length of the calyx. Legume larger than the flower, remarkably thorny, containing one or two seeds. It differs from the foregoing species, in its annual root, the minuteness of the wings in the corolla, and in the larger size of the legumes^h.

80. Root annual. Petioles equal in length. The spines along the keel of the legume are larger, lanceolate, serrateⁱ. Native of the Levant.

81. The structure of the fructification perfectly resembles that of *H. lagopodioides* and *barbatum*; and it is singular, that after the flowering is over, each pedicel is bent back in an arch, the three larger hairy segments of the calyx being bent back, so that the smooth legume is hid, and wrapped up among the pedicels so as not to be visible, perfectly as in the above-mentioned species. It differs, however, in having a lofty, upright, shrubby stem, almost arboreous; and pinnate leaves, with five, oblong leaflets^k.

Stem five feet high, round, tomentose, with diffused branches. Leaflets about three pairs, lanceolate, four inches long, quite entire, smooth, veined. Stipules

lanceolate, very small. Flower violet-coloured, in a close, round, straight, terminating spike, a foot long: bractes lanceolate, acuminate, ciliate, two-flowered. Peduncles long, hairy, bent in. Calyx very hairy, the five segments awl-shaped and spreading. Corolla: banner roundish, entire, converging; wings shorter, oblong; keel crescent-shaped, of a length between the banner and wings. Legume long, slender, of about seven joints, which are roundish, connected by a dorsal thread, drawn back and plaited within the calyx; pressed close to the common peduncle, the proper pedicels being bent in archwise. This, though it differs in several circumstances from *H. lagopodioides*, yet does not differ from it a great deal. It has almost always pinnate leaves, of two or three pairs of leaflets, and very rarely indeed ternate; whereas that has ternate and quinate leaves promiscuously^l.—Native of India, China and Cochinchina.—Introduced in 1780; by Sir Joseph Banks, Bart.^m

82. Branches angular, villose. Leaflets three pairs, with an odd one, linear-lanceolate, a span long and more, smooth on both sides, almost equal, veined. Petiole the length of the leaf, villose. Petiolules very short, hirsute. Stipules ovate, acuminate, nerved; with two others which are awl-shaped at each pair of leaves, longer than the petiolule. Raceme terminating, a span long, upright, terminated by several lanceolate attenuated bractes four times as long as the flower, in form of a coma. Flowers crowded, on very short pedicels. Lowest bractes ovate, acuminate, permanent, nerved, villose; the upper ones deciduous, except that at the end. It seems to be distinct enough from *H. crinitum*, from which it differs in having narrower longer leaves, and a more slender raceme, terminated by bractes in form of a comaⁿ.

According to Jacquin, this very handsome plant has a perennial root; an upright, round stem, a foot and half high, leafy all over, closely hispid, with very minute white hairs; flowers at first red, but changing to blue, soon falling. Peduncle round, often as thick as a quill; pedicels in pairs, slender, spreading, three or four lines in length; both closely set with headed very acid hairs. Calyx hirsute and ciliate; tube bell-shaped; border reddish, spreading; segments lanceolate, acuminate, the two upper ones shorter. Banner roundish, quite entire, spreading; wings blunt, opposite to the banner; keel of the same form and in the same situation with the wings. Legume flexuose, with about five rounded, compressed, wrinkled joints lying on each other. Found in the East-Indies by Koenig, and in Guinea by Iffert.

83. Stem low, hard. Stipules membranaceous, small, acuminate. Leaflets seven or nine. Peduncles axillary, solitary, simple, mucronate, changing into round thorns, the length of the leaves, divaricating from the branch. Flowers three or four, alternate, pedicelled, placed below the tip of the peduncle. In figure it resembles the second *Onobrychis* of Clusius, hist. 2. 239.^o Native of the Levant.

84. Stem herbaceous, round, purplish, smooth. Leaflets about four pairs, on very short petioles, oblong, acute, ending in a bristle, entire, smooth, spreading, an inch in length, the upper ones a little larger. Flowers axillary, flesh-coloured. Racemes a span in length. It differs from *H. obscurum* in being without any stipules.—Native of Japan^p.

85. Stem suffrutescent, two feet high, branched. Leaflets smooth. Flowers dark violet-coloured, small, in upright spikes. Legumes linear, acuminate, containing six seeds.—Native of Cochinchina.—The root is esteemed to be deobstruent, emmenagogue, and to create an appetite^q.]

86. Stem shrubby, six or seven feet high, dividing into several branches. Leaflets pale green above. Spikes sessile, long and narrow. Flowers small, bright purple. Legumes flat, smooth, jointed, about an inch long. [Thunberg and Vahl have given the same trivial name of *sericeum* to other species. See n. 60. and 76.]

^d Linn. spec. & syst.

^e Hort. kew.

^f Ger. prov.

^g Ger. prov.

^h Linn. mant.

ⁱ Linn. spec.

^j Linn.

^k Loureiro.

^l Linn.

^m Hort. kew.

ⁿ Thunberg.

^o Vahl.

^p Loureiro.

87. This is an annual plant, seldom rising more than eight or nine inches high, sending out several branches from the root, which are diffused and hairy. Leaflets small, ovate, a little hoary. Spikes close and short. Corolla purple.

These are both natives of La Vera Cruz, [and were cultivated by Mr. Miller in 1731.]

88. Stem about two feet high: the upper part branches into panicles of flowers, which are of a pale purple colour. Legumes lunulate, compressed, standing oblique to the stem, one-seeded. Native of Campeachy.

89. Stem twining, and climbing to the height of ten or twelve feet. Leaves on pretty long footstalks. Flowers dark purple, sitting close to the stalk. Native of La Vera Cruz.

These were all sent to Mr. Miller by Dr. Houstoun, [and were cultivated by him in 1731, if not sooner.]

90. Root perennial. Stem annual, erect, about two feet high. Leaflets long, rounded at the base where they are broadest, and narrowed all the way to a point; they are near three inches and a half long, and half an inch broad at the base, of a light green colour, and smooth: the two side ones sit pretty close to the stalk, but the middle one sits upon a foot-stalk an inch long: the flowers are produced in long axillary spikes, growing erect; the lower part of the spike is but thinly set with flowers, but on the upper part they are disposed very close; they are small, and of a bright yellow colour, sessile, and succeeded by jointed pods, straight on one side. Native of South Carolina, whence it was sent to Mr. Miller by Dr. Dale.

PROPAGATION AND CULTURE.

1. This is propagated by seeds, which will frequently lie a year in the ground before they vegetate: sow them therefore in pots filled with light earth, and plunge them into a moderate hot-bed: if the plants do not appear by the beginning of june, take the pots out of the bed, and place them where they may have only the morning sun, and in the autumn plunge them into an old bed of tanner's bark under a frame; in spring plunge them into a fresh hot-bed, which will bring up the plants: when these are fit to remove, put them separately into small pots filled with light earth, and plunge them into a very moderate hot-bed, shading them from the sun till they have taken new root; then gradually inure them to the open air, into which remove them in june, placing them in a sheltered situation, where they may remain till the autumn; at which time plunge them into an old tan-bed under a frame, where they may be protected from frost, and in mild weather enjoy the free air. In a warm border, by covering it in frosty weather, this plant will endure our winters, when they are not severe.

The other simple-leaved sorts (2 to 18) and the two-leaved sort, together with the greatest part of the rest, are too tender to thrive in the open air: for their native places of growth are the East or West-Indies.

They are propagated by seeds, which must be sown upon a hot-bed early in the spring. When the plants are fit to remove, they must be each planted in a separate small pot, filled with light earth; plunging them into a fresh hot-bed, where they should be screened from the sun, till they have taken new root; after which they may be treated in the same manner as other tender plants: always keeping them in the bark stove or glass-case, otherwise they will not produce seeds, nor even always flower in England. They require as much air as possible in warm weather. Many of the sorts seldom flower till the second year.

35. The seeds may be sown the beginning of april, in a bed of light fresh earth. When the plants are come up two inches high, they should be transplanted where they are to remain for good; but if they are not too thick in the seed-bed, they may be suffered to remain there until the following autumn; at which time they should be carefully taken up, and transplanted into the borders where they are designed to stand; for their roots generally run down very deep, so that it is not safe to remove them often. This plant produces its flowers about the same time of the year

as the former, and if the season proves favourable, perfects its seeds in autumn; and the roots will abide in the open air very well, resisting the severest cold, provided they are planted in a dry soil.

43. This may be raised in the manner directed for the simple-leaved sorts: in summer the plants may be exposed to the open air, but in autumn they must be placed under a frame to screen them from frost; the following spring some of these plants may be shaken out of the pots, and planted in a warm border, where, if the summer prove warm, they will flower, but these seldom perfect their seeds; therefore two or three plants should be put into larger pots, and plunged into a moderate hot-bed, which will bring them early to flower, and if the glasses be kept over them in bad weather, these will ripen their seeds in autumn; and the roots will continue some years, if screened from frost in winter.

The 90th sort may be treated in the same manner.

69. The common French Honeyfuckle, and other hardy sorts, are propagated by sowing their seeds in april, in a bed of light fresh earth; and when the plants come up, they should be transplanted into other beds of the like earth, and in an open situation, at about six or eight inches distance from each other, leaving a path between every four rows, to go between them to hoe, and clear them from weeds. In these beds they may remain until michaelmas, then may be transplanted into the large borders of a parterre or pleasure-garden, allowing them at least three feet distance from other plants, amongst which they should be interspersed, to continue the succession of flowers; where they will make a fine appearance when blown, especially the red sort, which produces very beautiful flowers.

As these plants decay after they have perfected their seeds, so there should annually be a fresh supply of plants raised, where they are desired, for the old roots seldom continue longer. They are very proper ornaments for large borders, or to fill up vacancies among shrubs, but they grow too large for small borders, unless their stalks are pruned off, leaving only two or three on each plant; which, if kept upright with sticks, will prevent their hanging over other flowers.

They furnish abundance of food agreeable to cattle, if not suffered to stand till the stalks are too hard and sticky.

70, 71, 72. Should be sown in april, where they are to remain, and require only to be thinned where they are too near, and to be kept clean from weeds.

77. *Saint-foin*,

If sown upon a dry, gravelly or chalky soil, will continue eighteen or twenty years; but on a deep moist soil the roots will run down into the ground, and in the winter season the moisture will rot them, so that it seldom lasts above two years in such places.

It is esteemed one of the best sorts of fodder for most cattle, and is a great improvement to chalky hills, upon which it succeeds better than in any other soil, and will continue many years, provided there be a surface of six or eight inches upon the chalk.

The best time for sowing the seed is the beginning or middle of april, according to the season, observing always to do it in dry weather, otherwise the seed will be apt to burst, and never come up. The seed being large, the common allowance is four bushels to an acre, but three is amply sufficient. If it were sown in rows, as directed for Lucerne, it would be a great improvement to the plants, for when these have room enough, they branch out on every side, and become very strong; and by hoeing between them the natural grass may be kept down, which, if permitted to grow, will rob the Saint-foin of its nourishment, and in time destroy it.

Saint-foin is frequently sown with oats or barley, but this is a very bad method, for what is gained from the crop of corn, will be doubly lost in the Saint-foin; and this generally holds true in most sorts of Grass seeds, for the corn growing over it so weakens the crop beneath, that it scarcely recovers its strength in a year after.

The ground in which this feed is sown should be well ploughed, and made very fine. If it be sown in drills, the drills should be eighteen inches asunder, and about an inch deep: if the plants come up too thick, they should be hoed out to the distance of six or eight inches, when the ground is hoed to destroy the weeds.

The first year by no means feed the crop down, for the crown of the roots being then young and tender, cattle would eat it so low as entirely to destroy the roots; and if large cattle were let in upon it, they would trample it down so much as to prevent its shooting again: the first year therefore it should be mowed, and this should be done when it is in flower.

The sooner it is carried off the ground, when cut, the better it will be for the plants. It does not require to be so often turned as other hay, for the stalks being large, they will not lie so close in the cocks as to ferment; in catching weather therefore the cocks may be made large, and if they be turned and spread every other day, or once in three days, there will be little danger of its heating, so as to receive damage; but if it be spread, and much exposed to rain and dew, the goodness of the hay will be exhausted.

The crop will be fit to cut the first year towards the end of July, or at the beginning of August. After this is cleared off, the roots will soon shoot again, and by the end of September, provided the season be favourable, there will be a fine crop fit for feeding. Sheep will enrich the ground with their dung, and greatly strengthen the roots; but they should not be suffered to remain upon it longer than the middle of November the first year; and the succeeding years, when the crop is cut early, it should not be fed longer than the middle of September.

Some cut two crops of Saint-foin hay in a year, but the latter crop is seldom of much value, and it weakens the roots. When seeds of Saint-foin are to be sowed, the crop should not be fed too low the foregoing autumn, for that will occasion the stalks to be weak. I have made trial of two rows of plants standing by each other, one of which I cut down in September with care, so as not to cut any buds for the future shoots; the other row I left untouched, and the following spring I found those plants which were not cut put out earlier and stronger, and the stalks grew taller than those which were cut, the plants produced a greater quantity of seeds, and the seeds were ripe a fortnight sooner.

The hay made from plants sowed for seed is no better fodder than chopped straw or chaff; and to have the hay in perfection, it should be cut before it begins to flower, when it abounds most in juice, and will nourish cattle much more than when it stands to be in full flower.

Saint-foin is exceeding good for horses, and is esteemed one of the best sorts of food for most cattle, especially in the spring, there being no danger attending it, as there is in Clover.

It produces abundance of milk, and butter made of it is very good. Since it has been introduced into England, many dairy farms have been set up, where it was formerly thought impracticable: and if this plant and Lucerne were properly cultivated to such an extent as they might be, not only a much greater quantity of milch cows might be maintained, but a greater number of black cattle might be fattened, and more sheep and hogs, which would be a great improvement to many estates in hilly countries; for by increasing the live stock, there will be an addition of manure for dressing the land, in proportion.

[Saint-foin is allowed on all hands to be an admirable improvement on lime-stone rocks and chalk downs, which, in order to be cultivated to the greatest advantage, should be in this course, with no more arable than is necessary for the change. Thus if Saint-foin last sixteen years, as it certainly will if properly managed, then sixteen parts of the down should be Saint-foin, and as many more parts as there are years necessary for tillage before the ground should be sowed with it again; suppose this period to be five years, the portions would then be

10. Saint-foin.

1. Saint-foin pared and burnt, and under Turneps.

1. Barley or Oats.

1. Clover.

1. Wheat.

1. Turneps.

1. Barley or Oats, and with this crop Saint-foin sown again.

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Suppose each part was twenty-seven acres, then there would be two hundred and seventy acres of Saint-foin, and so on.

Saint-foin is also a vast improvement in thin, loose, dry, sandy loams, upon marl or chalk bottoms. Thin soils that wear out, or tire of Clover, are laid down to great advantage with it, will last twenty years, and pay the farmer as well as his best corn crops. If a flock of Sheep be an object of primary importance, this plant will afford them plenty of dry food for winter in hard weather. An acre of indifferent land will yield two tons of Saint-foin dry, and therefore twenty acres will serve 1000 Sheep for a month, supposing a Sheep eats three pounds of hay in a day, which is a large allowance. Now the expense of an acre of Saint-foin, including 14s. for rent, tithe and poor, is about one pound; whereas that of an acre of turneps will be two pounds seven shillings. Eight acres and a half of turneps then balance twenty acres of Saint-foin. Now 1000 Sheep will eat two acres and a half of turneps in a day, and therefore seventy-five acres will be required for a month: or at the lowest calculation twenty-four acres, the expense of which is 56l. 8s. to be set against 20l. the expense of Saint-foin.

Some green food, however, should be joined with the hay, for milch ewes or cattle. Green borecole, the turnep-rooted cabbage, or the Swedish turnep, would answer this purpose; being hardy, and standing above the snow.

One great advantage of this, in common with other artificial grasses is, that even in a dry season, from a ton to a ton and half of hay may be had from an acre, when natural meadows unwatered will produce only half a ton.

The most common time of sowing Saint-foin is the spring; and it is even commonly reputed bad husbandry to sow it in the autumn, because the frost is apt to draw it out of the ground. It has however been sown with success in October along with wheat or rye, after winter tares. The crop was good, even the first season, though it happened to be a very dry one; whereas it is well known that Saint-foin sown in the spring yields a very scanty crop the first year, even when assisted with manure.

At either season Saint-foin is commonly sown with corn; but it is still doubtful whether the crop of artificial grass may not be diminished in proportion as the crop of corn flourishes. Other seeds are sometimes sown with it to give a crop the first year, as white clover, common red clover, and trefoil: of these the first is much the best.

The quantity of seed usually sown is at least four bushels, and some sow five; though Mr. Miller is for sowing a less quantity. In drilling two bushels are sufficient; but this is not a common practice with Saint-foin.

One of the best preparations for Saint-foin, is to take two crops of turneps in succession, and then in the spring to sow four bushels of this feed with two bushels of barley.

Coal-ashes are a good dress for Saint-foin; and foot a still better, in the quantity of from ten to twenty bushels on an acre, laid on early in the spring.

Saint-foin is much troubled with a sort of grass which botanists call *Bromus sterilis*, and farmers know by the name of Black-grass. The scythe slips over it, the feed ripens very early, and is difficult to sepa-

^r Young's Ann. 8. p. 73.

^t Ibid. 4. p. 62.

^x Ibid. 2. p. 359.

^s Ibid. 2. p. 360.

^u Ibid. 11. p. 314.

^y Ibid. 4. p. 339.

rate from the Saint-foin seed. It may easily be pulled up by hand².

When the crop begins to fail, or the land is wanted for something else, a Saint-foin lay may be broken up successfully for Potatoes; for the red-worm, which makes such ravages if corn be sowed without paring and burning, will not touch the Potatoes².

Modern writers affect to write *Sainfoin* as if it were wholesome hay; whereas it is *Saint-foin* or holy hay, from a presumption of its superior excellence. Vulgar persons confound it with Cinquefoil, from the sound merely, for no two vegetables can be more different.

HEDYSARUM. See *Æschynomene*, *Coronilla*, *Indigofera*, *Pterocarpus*.

HEISTERA. (So named by *Jacquin* in honour of *Laurence Heister*, Archiater and Professor of Medicine at *Helmstadt*; author of *Hortus Helmstad.* 1730. *Systema Plantarum*, 1748. &c.)

Lin. gen. n. 535. *Reich.* 586. *Schreb.* 736. *Jacqu. amer.* 126. *Juss.* 260.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Holoraceæ*.—*Aurantia*, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, bell-shaped, five-cleft, acute, small, permanent.

COR. *Petals* five, ovate, acute, concave, spreading.

STAM. *Filaments* ten, ovate, acute, flat, upright; alternately shorter. *Anthers* roundish.

PIST. *Germ* roundish, flattened. *Style* upright, short. *Stigma* four-cleft, obtuse.

PER. *Drupe* oblong, flattened at the tip; placed on a very large, coloured calyx.

SEED. *Nut* oval, obtuse.

OBS. It is allied to *Laurus*.

ESSENTIAL CHARACTER.

Cal. five-cleft. *Petals* five. *Drupe* with a very large coloured calyx.

SPECIES.

1. *Heistera coccinea*.

Lin. spec. 1663. *syst.* 403. *Reich.* 2. 283. *Jacqu. amer.* 126. *t.* 81. *piet.* 64. *t.* 122.

Borbonia fructu oblongo nigro, calyce coccineo. Plum. gen. 4.

DESCRIPTION, &c.

This is an inelegant branching tree, twenty feet in height. Leaves oblong, quite entire, drawing to a sickle-shaped point, shining, on short petioles, alternate, half a foot in length. Flowers small, peduncled, axillary, with white corollas. Calyx in the flower small and green, in the fruit scarlet, with a very large spreading limb, and short, very blunt, roundish segments. Native of *Martinico*, in close woods near torrents, flowering in february and march, and fruiting in june. The French inhabitants call it *Bois Perdrix*, birds being very fond of the fruit^b.

HEISTERIA. See *Polygala*.

HELENIA & HELENIASTRUM. See *Helenium*.]

HELENIUM. (ΕΛΕΝΙΟΝ of *Dioscorides*. From *Helen*, the wife of *Menelaus*, who, as *Hesychius* says, cultivated a plant that destroyed serpents: according to others, this plant sprung from her tears.)

Lin. gen. n. 961. *Reich.* 1041. *Schreb.* 1299. *Juss.* 189. *Heleniastrum. Vaill. mem. acad.*

1720. *Helenia. Gært. t.* 169.

Class. 19. 2. Syngenesia Polygamia Superflua.

Nat. order of *Compositæ Discoideæ*.—*Corymbifera*, *Juss.*

GENERIC CHARACTER.

CAL. *Common* simple, one-leafed, many-parted, spreading; *leaflets* about twenty, gradually drawing to a point. (oblong, sharp, equal. *G.*)

COR. *Compound* radiate: *Corollets* hermaphrodite, numerous in the disk; *females* as many as there are parts of the calyx, in the ray.

Proper—of the *hermaphrodites* tubular, shorter than the calyx, five-toothed.—of the *females* ligulate, broader outwards, trifid at the tip, longer than the calyx.

STAM. in the *hermaphrodites*: *filaments* five, capillary, very short. *Anther* cylindric, tubular.

² Young's Ann. 7. p. 575.

^b *Jacquin*.

^a *Ibid.* 3. p. 83.

PIST. in the *hermaphrodites*: *Germ* oblong. *Style* filiform, length of the *stamens*. *Stigma* bifid.—in the *females*: *Germ* oblong. *Style* very short. *Stigma* bifid.

PER. none. *Calyx* unchanged.

SEEDS in the *hermaphrodites* solitary, obovate, angular, crowned with a small, five-toothed *calycle*:—in the *females*, very like the others.

REC. naked, convex: the *calycine chaffs* only of the ray separating the *florets*.

ESSENTIAL CHARACTER.

Cal. simple, many-parted. *Corollets* of the ray femi-trifid. *Down* five-awned. *Recept.* naked, excepting the *calycine chaffs* in the ray.

SPECIES.

1. *Helenium autumnale. Smooth Helenium.*

Lin. spec. 1248. *syst.* 769. *Reich.* 3. 837. *hort. cliff.* 418. *ups.* 266. *Ait. hort. kew.* 3. 227. *Gron. virg.* 126.

Helenia autumnalis. Gært. fruct. 2. 438.

Chrysanthemum americanum, &c. Mor. hist. 3. 24. *n.* 82. *f.* 6. *t.* 6. *f.* 74.

After floridanus, &c. Pluk. phyt. t. 372. *f.* 4.

A. luteus alatus. Corn. canad. 52. *t.* 63.

Leaves very smooth.

[2. *Helenium pubescens. Downy Helenium.*

Ait. hort. kew. 3. 227.

Leaves pubescent.

DESCRIPTIONS, &c.

1. *Miller*, following *Vaillant*, has made two species out of this: the first with entire leaves, which he names *Helenium autumnale*; the second with serrate leaves, which he names *H. latifolium*. The first is the *Heleniastrum folio longiore & angustiore*; the second is, *H. fol. brevior & latior* of *Vaillant*. *Miller* thus describes them.]

These plants rise to the height of six or seven feet in good ground; the roots, when large, send up a great number of stalks, which branch toward the top; those of the first have smooth leaves, three inches and a half long, and half an inch broad in the middle, with entire edges, sitting close to the stalks, and from their base is extended a leafy border along the stalk, so as to form what was generally termed a winged stalk, but *Linneus* calls it a decurrent leaf; the upper part of the stalk divides, and from each division arises a naked peduncle about three inches long, sustaining one yellow flower at the top, shaped like a Sun-flower, but much smaller, having long rays, which are jagged pretty deep into four or five segments; these appear in august, and there is a succession of flowers on the plants till the frost puts a stop to them.

The second has the appearance of the first, but the leaves are not three inches long, and are more than an inch broad in the middle, ending in acute points, and are sharply serrate on their edges. The flowers stand upon shorter peduncles, growing closer together, for the stalks of this do not branch near so much as those of the other; they both flower at the same season.

There is also another with leaves as narrow as the first, which are acutely indented on the edges. The stalks branch at the top somewhat like those of the first, but the middle flowers have much shorter foot-stalks than those which branch on the side, and are garnished with small leaves, almost to the top; but I am not certain if this is a distinct species, or only a variety which has accidentally risen from the seeds of the other.

These plants are natives of America; the seeds of both I have received from Virginia and New-England, where they grow wild in great plenty in the woods, and other shady places where the ground is moist.

[*Helenium autumnale* was cultivated in the botanic garden at Chelsea in 1729.

2. This also is native of North America; it was introduced in 1776, by Mr. William Malcolm, and flowers in august and september^c.]

PROPAGATION AND CULTURE.

They may be propagated by seeds, or by parting their roots; but the latter is generally practised in this country, because they seldom perfect their seeds here;

^c *Hort. kew.*

but if the seeds are procured from abroad, they should be sown the beginning of march on a border of light earth; and if the seeds should not come up the first year, the ground should not be disturbed, because they often remain a whole year in the ground before the plants come up; in which case there is nothing more to be done, but to keep the ground clear from weeds, and wait until the plants rise. When they appear, if the season proves dry, they must be often watered, which will greatly forward their growth; and where the plants come up too close to each other, they should be thinned, and transplanted out into beds a foot asunder every way, being careful to shade them until they have taken root, as also to water them in dry weather. In autumn they may be transplanted where they are to remain, and the following summer they will produce their flowers, which will continue till the frost prevents them; and their roots will abide many years, and afford many offsets, by which they may be increased.

The best season to transplant the old roots, and to part them for increase, is in the end of october, when their flowers are past, or the beginning of march, just before they begin to shoot; but if the spring should prove dry, they must be duly watered, otherwise they will not produce many flowers the same year; these plants should not be removed oftener than every other year, if they are expected to flower strong; they delight in a soil rather moist than dry, provided it be not too strong, nor holds the wet in winter; but if they are planted in a dry soil, they must be often and plentifully watered in dry weather, to make them produce plenty of flowers.

HELENium. See *Inula* [& *Helianthus*.

HELIANTHEMOIDES. See *Turnera*.

HELIANTHEMUM. See *Cistus*, *Portulaca*, *Turnera*.

HELIANTHUS. (From *ἥλιος*, the sun, and *ανθος*, a flower.)

Lin. gen. n. 979. Reich. 1060. Schreb. 1322. Juss. 189. Gært. t. 172. Corona solis. Vaill. mem. acad. 1720. f. 12. 45. Tournef. t. 279. Dill. elth. 94.

Class. 19. 3. Syngenesia Polygamia Frustranea.

Nat. order of Compositæ Oppositifoliæ.—Corymbiferae, Juss. GENERIC CHARACTER.

CAL. Common imbricate, somewhat squarrose, expanded: scales oblong, broadish at the base, gaping every where at the tips.

COR. Compound radiate: corollets hermaphrodite, very numerous in the disk: females fewer, much longer in the ray.

Proper: of the hermaphrodites cylindric, shorter than the common calyx, bellying at the base, orbicular, depressed: border five-toothed, sharp, spreading:—of the females ligular, lanceolate, quite entire, very long.

STAM. in the hermaphrodites: filaments five, curved, inserted below the belly of the corollet, the length of the tube. Anther cylindric, tubular.

PIST. in the hermaphrodites: germ oblong: style filiform, length of the corollet: stigma two-parted, reflex.—in the females: germ very small: style and stigma none.

PER. none. Calyx unchanged.

SEEDS in the hermaphrodites solitary, oblong, blunt, four-cornered, compressed at the opposite angles; the inner ones narrower, crowned with two lanceolate, acute, deciduous chaffs:—in the females none.

REC. chaffy, large, flat: chaffs lanceolate, acute, two separating each seed, deciduous.

ESSENTIAL CHARACTER.

Cal. imbricate, somewhat squarrose. Down two-leaved. Recept. chaffy, flat.

SPECIES.

1. *Helianthus annuus*. Annual Sun-flower.

Lin. spec. 1276. Reich. 3. 883. vir. cliff. 38. hort. cliff. 419. upf. 268. Mill. illustr. ic.

Helenium indicum maximum. Baub. pin. 276.

Flos solis. Ger. 612. f. 1, 2. & 613. f. 3. emac. 751. f. 1. Raii hist. 334.

Chrysanthemum peruvianum, f. Flos Solis. Park. parad. 295. t. 297. f. 2.—*indicum maximum annuum non ramosum*. Mor. hist. 3. 19. f. 6. t. 6. f. 36.

Herba maxima. Dod. pempt. 264. Baub. hist. 3. 107. Chrysis. Renealm. spec. 84. t. 83.

All the leaves cordate, three-nerved, peduncles thickening, flowers drooping.

[2. *Helianthus indicus*. Dwarf Annual Sun-flower.

Lin. syst. 781. Reich. 3. 383. mant. 117.

Corona folis minor 3. Tabern. hist. 1147.

All the leaves cordate, three-nerved, peduncles equal, calyxes leafy.]

3. *Helianthus multiflorus*. Perennial Sun-flower.

Lin. spec. 1277. Reich. 3. 883. hort. cliff. 419. upf. 268. Gært. fruct. 443. Curtis magaz. t. 227.

Helenium indicum ramosum. Baub. pin. 277.

Chrysanthemum americanum majus perenne, Floris Solis foliis & floribus. Mor. hist. 3. 23. f. 6. t. 7. f. 59. Pluk. phyt. t. 159. f. 2.

Corona folis minor femina. Tabern. ic. 764.

Flos Solis minor foemina. Ger. 613. f. 4.

Lower leaves cordate, three-nerved, upper ones ovate.

4. *Helianthus tuberosus*. Tuberous-rooted Sun-flower, or Jerusalem Artichoke.

Lin. spec. 1277. Reich. 3. 884. hort. cliff. 419. upf. 268. Gron. virg. 129. Jacqu. hort. 2. 75. t. 161.

Helenium indicum tuberosum. Baub. pin. 277.

Chrysanthemum latifolium brasilianum. Baub. prodr. 70.

Ch. perenne majus fol. integris, americanum tuberosum. Mor. hist. 3. 23. f. 6. t. 6. f. 57.

Flos solis farnesianus. Col. ecphr. 2. 11. t. 13.

Flos solis pyramidalis. Ger. emac. 753. Raii hist. 335.

Battatas de Canada. Park. parad. t. 517. f. 4.

Leaves ovate-cordate, triple-nerved.

5. *Helianthus decapetalus*. Ten-petalled Sun-flower.

Lin. spec. 1277. Reich. 3. 884.

Stem smooth at bottom: leaves lanceolate-cordate, triple-nerved: ray of the flower ten-petalled; peduncles scabrous.

[6. *Helianthus frondosus*.

Lin. spec. 1277. Reich. 3. 884. anten. 4. 290.

Calyx squarrose, waved, leafy; rays eight-petalled; leaves ovate; stem scabrous at bottom.]

7. *Helianthus strumosus*. Carrot-rooted Sun-flower.

Lin. spec. 1277. Reich. 3. 884. hort. cliff. 420.

Chrysanthemum canadense strumosum. Mor. hist. 3. 23. Root fusiform.

8. *Helianthus giganteus*. Gigantic Sun-flower.

Lin. spec. 1278. Reich. 3. 885. Gron. virg. 129. Loureiro cochinch. 509.

Chrysanthemum virginianum elatius angustifolium, viride. Mor. 3. 24. f. 6. t. 7. f. 66.

β. C. virg. elat. ang., caule hirsuto viridi. Pluk. alm. t. 159. f. 5.

Leaves alternate, lanceolate, scabrous, ciliate at the base, stem stiff, scabrous.

9. *Helianthus altissimus*. Tall Sun-flower.

Lin. spec. 1278. Reich. 3. 885. Jacqu. hort. 2. t. 160.

Ch. virgin. altissimum, puniceis caulibus. Mor. t. 7. f. 67.

Leaves alternate, broadish, lanceolate, scabrous, petioles ciliate, stem stiff, smooth.

10. *Helianthus angustifolius*.

Lin. spec. 1279. syst. 781. Reich. 3. 886. Gron. virg. 129.

Leaves alternate, linear.

11. *Helianthus divaricatus*. Rough-leaved Sun-flower.

Lin. spec. 1279. Reich. 3. 886.

Ch. virg. repens, fol. asperis pinatim sessilibus acuminatis. Mor. 22. n. 66.

Leaves opposite, sessile, ovate-oblong, three-nerved, panicle dichotomous.

12. *Helianthus atrorubens*. Dark-red Sun-flower.

Lin. spec. 1279. Reich. 3. 886. Gron. virg. 128. Dill. elth. 111. t. 94. f. 110. (Corona folis).

Leaves opposite, spatulate, crenate, triple-nerved, scabrous; calycine scales erect, the length of the disk.

DESCRIPTIONS, &c.

[These are hardy herbaceous plants, most of them tall and large, and all perennial, except the two first.

The leaves rough, in some opposite, in others alternate. The flowers in general very large, and yellow; in the last, the flowers are smaller, and the disk is of a dusky red colour. They are all natives of America: the annual sorts ripen seeds, the perennials not.

1. Root annual. Stem single or branched, from five or six to ten or fourteen feet in height, and in hot climates twenty or more; when vigorous, the size of a man's arm. Leaves alternate, a span or a span and half in length, and almost as much in breadth, rough, ferrate, acuminate, hanging down at the end, on long petioles. Flower single, (sometimes several,) nodding, a foot or more in diameter. Gerarde mentions one that flowered in his garden, of sixteen inches in breadth, and weighing three pounds two ounces. The semi-florets or ligulate floscules in the ray are usually of a fine golden colour, and near an inch in breadth, ending in a point which is commonly bent back. The florets or tubular floscules in the ample disk are of a darker colour, closely wedged together, and very numerous. The seeds are numerous (Bauhin mentions 2362 in one flower), black, variegated or white, and when these have quitted their cells, the receptacle looks like a honeycomb. The great size of the whole compound flower recommends it to the student for the examination of the floscules, which in the class Syngenesia are usually very small. The whole plant, and particularly the flower, exudes a thin, pellucid, odorous resin, resembling Venice turpentine.] The seeds are excellent food for domestic poultry.

Varieties are—double flowers, and deep yellow, and sulphur-coloured. [This flower becomes double by the change of tubular into ligular florets, like those in the ray, only smaller.

Gerarde observes, that it was called *Indian Sun-flower*, or *Flower of the Sun*, *Corona Solis* and *Sol indianus*, because it resembles the radiant beams of the sun. As to its turning with the sun, it is a vulgar error; Gerarde says he could never observe it; and I have seen four flowers on the same stem pointing to the four cardinal points.

Native of Mexico and Peru; flowering from June to October.

2. This perhaps may only be a variety of the foregoing, though constant: but the leaves are convex above in the disk, and of a darker green. The peduncles are less thickened at top, or rather of an equal thickness everywhere, whence the flowers nod less. The scales of the calyx, except the inmost row, grow out into petioled pendulous leaflets^a. We do not know the native country of this, but there is little doubt of its coming from Mexico or Peru.—Linneus says that it is cultivated in Egypt.—It grows only from eighteen inches to three feet in height.—Introduced, according to the Kew catalogue, by Chevalier Thunberg in 1785.

3. Stem and peduncles scabrous. Leaves cordate-ovate. Calyxes loosely imbricate, neither squarrose nor drooping, consisting of forty to fifty scales^b.—Stems many, upright, from five or six feet to eight or nine in height, branching, the stem and each branch terminated by a flower, the principal one sometimes nine or ten inches in diameter, the lateral ones gradually smaller. Leaves some opposite, others alternate. There is a constant succession of flowers from July to November.—It is a native of Virginia, and was introduced before 1699, by William Farmer Lord Lemster^c.

4. Stems several, rough, hairy, streaked, from ten or twelve to sixteen feet in height, the size of a child's arm. Leaves alternate, light green, rough, pointed, eight inches broad, and ten or eleven inches long, deeply ferrate, smaller towards the top. Branches many, long, from bottom to top. Flowers terminating, small; florets in the ray twelve or thirteen. These seldom blow before October, and in some seasons they do not expand at all. The seeds never ripen here.—Roots creeping, with many tubers clustered together, thirty, forty or fifty from one plant, measuring a peck, or in

good soils half a bushel; they are like the common Potatoe, red on the outside, and very irregular in their shape, the size of a man's fist at the biggest^d.

Mr. John Goodyer received, in 1617, two small roots from Mr. Franquevill of London, no bigger than hen's eggs; the one he planted, and the other he gave to a friend. His brought him a peck of roots, wherewith he stored Hampshire. This note is dated the 17th of October 1621: and Johnson observes that his friend took it presently upon the first arrival into England. If this were the era of the first introduction of Jerusalem Artichoke, it seems surprising, even allowing for the facility with which it is increased, that so soon as the year 1629, or even earlier, it should have become so common in London, that even the most vulgar began to despise it: whereas when first received among us, it was, as Parkinson says, a dainty for a queen^e. By the latter expression, one would suppose that it had been known here in the time of Queen Elisabeth.—Our ancestors boiled them tender, and then being peeled, ate them sliced and stewed with butter, wine and spices—thus, says Parkinson, they were a dish for a Queen, being as pleasant as the bottom of an Artichoke: but the too frequent use, especially being so plentiful and cheap, hath rather bred a loathing than a liking of them. They also baked them in pies, with marrow, dates, ginger, raisins, sack, &c. —This root probably got into disuse, from a notion of its flatulent quality. The Potatoe seems to be more nutritious and wholesome; it is not necessary therefore now to enforce the cultivation of Jerusalem Artichoke as a general article of food, but it certainly makes an agreeable variety at good tables. There is no better reason for its common English name, than that the root, when boiled, has the taste of an Artichoke bottom: Parkinson therefore would have it called Potatoes of Canada, because the French brought them first from Canada into these parts. Not that Canada is their original country, for they are unquestionably the produce of a hot climate, being natives of Brasil.

5. This resembles *H. multiflorus*, or common Perennial Sun-flower, very much; but it differs in having the stem, which scarcely attains the height of a man, scabrous, but smooth at bottom. The leaves more lanceolate-ovate, not cordate, opposite, and ciliate at the base. The corolla with not more than ten florets in the ray. The calyx has twenty scales, is squarrose, hispid, the leaflets not waved, and very seldom growing out into leaves.—Native of Canada^f. It was cultivated in 1759, by Mr. Miller^g.

6. This is allied to the foregoing species. In Lin. spec. the stem is said to be smooth at bottom. Native of Canada.

7. Roots white and fleshy. Stems several, nine or ten feet high, round, rough, somewhat hirsute, streaked, subdivided into numerous branches. Leaves alternate, a hand long, an inch or more broad, acuminate, rough, dark green, slightly notched about the edge. Flowers terminating, in corymbs, petals pale yellow, ending in a bifid point: leaflets of the calyx produced into long leaves. The roots are bitterish, aromatic, and not disagreeable: they are eaten by the Canadians, among whom this plant grows wild.—It was cultivated in 1759, by Mr. Miller, and flowers from July to September^h.

8. Stem ten feet high, green, hispid or scabrous. Leaves by no means triple-nerved, ferrate, scabrous on both sides, ending in ciliate petioles. Peduncles scabrous, hispid. Usually about twenty florets in the ray, bifid at the end. The first two leaves of the branches are opposite, and have the appearance of stipules. The flowers nod more in the night than in the day. Native of Virginia and Canadaⁱ. Loureiro says, it is cultivated in China and Cochin.—Cultivated here in 1714, by the Dutchess of Beaufort. It flowers in September and October^k.

9. Sister of the foregoing, of the same structure and height; but the leaves are in breadth one fourth (not

^d Goodyer in Ger. emac.

^e Parad. printed 1629.

^f Linn. spec.

^g Hort. kew.

^h Ibid.

ⁱ Linn. spec.

^k Hort. kew.

^a Linn. mant.

^b Linn. spec.

^c Morison in Hort. kew.

one sixth) of the length, different in their serratures, triple-nerved at the base, petioled, almost ovate-lanceolate. The whole stalk not only smooth and even, but purplish. Leaflets of the calyx shorter, and not so copious. Usually sixteen florets in the ray. The chaffs in this are green, in the foregoing blackish, whence the disk in that, before the flower unfolds, is black; in this, green. Native of Pennsylvania¹. Cultivated in 1739, by Mr. Miller. It flowers in august and september^m.

10. Stem purplish, a foot and half in height. Leaves linear, acuminate, scabrous, rolled back at the edge, pale underneath. Disk of the corolla brown; ray deep yellow, emarginateⁿ.—Native of Virginia.

11. Stem scarcely the height of a man, extremely even at top, but with scattered rough hairs, purple, with a glaucous bloom. Flowers in a panicle, with trichotomous branches, yellow, small, peduncled, with the middle peduncle simple. Peduncles somewhat scabrous. Native of North Americaⁿ.—Cultivated in 1759, by Mr. Miller. It flowers from august to october^p.

12. Stem commonly single, about the size of a swan's quill at bottom, from eighteen inches to three feet and more in height, round, dusky purple, rough, with abundant whitish hairs. Root-leaves flat, hairy, smaller than those on the stem, which are twisted and waved, especially towards the end, rough, with frequent hairs, and on the lower ones particularly with small tubercles. Flowering branches divaricate. The disk of the flower dark red: floscules in the ray yellow, marked with a few lines, pointed and entire, sometimes in very old flowers divided into segments.

Native of Carolina^q and Virginia.—It flowers in september and october, and continues two or three years.—Cultivated in the Eltham garden in 1732, if not earlier.]

PROPAGATION AND CULTURE.

The annual sorts (1, 2.) are easily propagated by seeds, sown in march upon a bed of common earth, and when the plants come up, thin them where they are too close, and keep them clean from weeds; when the plants are grown six inches high, they may be taken up with balls of earth to their roots, and planted into the large borders of the pleasure-garden, observing to water them till they have taken new root; after which they will require no other care, but to keep them clear from weeds.

In july the great flowers upon the tops of the stems will appear, amongst which, the best and most double flowers of each kind should be preserved for seeds; for those which flower later upon the side branches are neither so fair, nor do they perfect their seeds so well, as those which are first in flower: when the flowers are quite faded, and the seeds are formed, you should carefully guard the heads from the sparrows, which will otherwise devour most of the good seeds; and about the beginning of october, when the seeds are ripe, you should cut off the heads with a small part of the stem, and hang them up in a dry airy place for about a month, by which time the seeds will be perfectly dry and hard; when you may easily rub them out, and put them into bags or papers, preserving them from vermin until the season for sowing them.

The perennial sorts rarely produce seeds in England, but most of them increase very fast at their roots, especially the creeping rooted kinds, which spread too far for small gardens. The third sort, which is the most common in the English gardens, is the largest and most valuable flower, and is a very proper furniture for large borders in great gardens, as also for bosquets of large growing plants, or to intermix in small quarters with shrubs, or in walks under trees, where few other trees will thrive; it is also a great ornament to gardens within the city, where it grows in defiance of the smoke, better than most other plants; and for its long continuance in flower, deserves a place in most gardens, for the sake of its flowers for basons, &c. to adorn halls and chimneys, in a season when we are at a

loss for other flowers. It begins flowering in july, and continues till october; there is a variety of this with very double flowers, which is now become so common in the English gardens, as to have almost banished the single sort from hence.

They are all very hardy, and will grow in almost any soil or situation; they are propagated by parting their roots into small heads, which in one year's time will spread and increase greatly. The best season for this work is in the middle of october, soon after the flowers are past, or very early in the spring, that they may be well rooted before the droughts come on; otherwise their flowers will be few in number, and not near so fair, and by this means their roots will be weak; but if they are planted in october, you will save the trouble of watering them; their roots being surely fixed before the dry weather, they will need no other trouble than to clear them from weeds.

4. The Jerusalem Artichoke is cultivated for the roots, which are by some people much esteemed.

These are propagated by planting the smaller roots, or the larger ones cut in pieces, observing to preserve a bud to each separate piece, either in the spring or autumn, allowing them a good distance, for their roots will greatly multiply; the autumn following, when their stems decay, the roots may be taken up for use. They should be planted in some remote corner of the garden, for they are very unsightly while growing; their roots over-run every thing, and they cannot easily be destroyed.

[When desired for a crop, the sets should be planted in an open part of the kitchen garden, in rows three feet or more asunder, at least eighteen inches distant from each other, and four or five inches deep. The best time for this is the latter end of march. A light soil suits them best. Some persons cut the stalks half way down, at the end of july or the beginning of august; because they shade the ground too much, and from their great height are apt to be blown down. They may be taken up for present use in september, and the whole crop may be housed in october. If kept in sand in a dry place, they will continue the whole winter.

HELIANTHUS LAEVIS. See *Buphthalmum helianthoides*.

HELICHRYSOIDES. See *Stoebe*.

HELICHRYSUM. See *Conyza* & *Gnaphalium*.

HELICONIA. (Ελικων, is a musical stringed instrument; also the name of a mountain in Boeotia. The Muses were called Ελικωνιαδες, from one of these.)

Lin. gen. Reich. n. 310. Schreb. 403. Juss. 61.

Palilia. auth. D. Allamand. Bihai. Plum. 3. Musa. Brown. 364.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Scitamineae*.—Musa, Juss.

GENERIC CHARACTER.

CAL. Spathes common and partial alternate, distinct, with hermaphrodite flowers. Perianth none.

COR. Petals three, oblong, channelled, erect, acute, equal. Nectary two-leaved: one leaflet nearly equal to the petals; the other very short, channelled, hooked, opposite.

STAM. Filaments five, (or six. Adanson), filiform. Anthers long, erect.

PIST. Germ inferior, oblong. Style shorter than the stamens. Stigma long, slender, curved, with a terminating head.

PER. Capsule oblong, truncate, three-sided, three-celled. SEEDS solitary, oblong.

OBS. Distinct from Musa by a tricoccous capsule.—Doubtful whether it should not be transferred to the class Hexandria.

ESSENTIAL CHARACTER.

Spathes. Perianth none. Cor. three-petalled. (irregular. Sw.) Nect. two-leaved. Peric. tricoccous: Seeds solitary. (Capsule fleshy, three-celled. Sw.)

SPECIES.

1. Heliconia Bihai. Bastard or Wild Plantain.

Lin. syst. 245. suppl. 157. mant. 211. Reich.

i. 573. Ait. hort. kew. i. 284. Swartz. obs. 96. t. 5. f. 2.

Musa Bihai. Lin. spec. 1477. Brown. jam. 364. 3. Sloan. jam. 147. 8.

¹ Linn. spec.

^m Hort. kew.

ⁿ Linn. syst.

[•] Linn. spec.

^p Hort. kew.

^q Dillenius.

Bihai. *Plum. gen.* 50. 3.

Leaves and spadix radical, spathes distich, cordate, nectary ventricose, bifid at the tip.

2. *Heliconia psittacorum.*

Lin. syst. 245. *suppl.* 158. *Swartz. obs.* 98.

H. Bihai. *Lin. gen. & Aubl. guian.*

Palilia. *Allamand.*

Leaves on the stem rounded at the base, spadix terminating, flexuose, spathes lanceolate, nectary lanceolate, concave, entire.

3. *Heliconia hirsuta.*

Lin. syst. 245. *suppl.* 158.

Leaves rounded at the base, simply nerved, very smooth, inflorescence hirsute, spadix flexuose, nectary lanceolate, adnate.

DESCRIPTIONS, &c.

1. This is a very large herbaceous plant, from ten to twelve feet in height. Leaves oblong, narrower at both ends, entire, marked with parallel lines, erect, thick, and very smooth. Petioles the length of the leaves or more, round, thick, channelled above. Scape upright, the length of the petioles, round, thick, smooth. Spadix simple, upright. Common spathes several (eight to ten), rigid, cordate, embracing, from erect spreading, acuminate, distich, yellowish brown. Flowers in bundles concealed within each spathe: partial spathes membranaceous, whitish, the length of the flowers, which are distinct, subsessile, pale or greenish yellow. Corolla cohering at the base, unequal, curved and recurved, as it were two-lipped: the two upper petals lanceolate, acute, a little reflex at the tip, below the middle converging, and towards the base coalescent with the lower petal, whitish at the base: lower petal scarcely longer than the upper ones, lanceolate, concave, a little recurved, entire and acuminate at the tip, with its base embracing the nectary behind. Nectary two-leaved: the hinder leaflet of the same length with the corolla, broad-lanceolate, concave, above the middle ventricose underneath, trifid at the tip, the edges membranaceous, converging, bent in; it incloses the filaments, and is filled with nectareous juice at the base; the leaflet in front is very minute, lanceolate, and fastened to the anterior petal of the corolla. Filaments five, almost the length of the corolla, below the middle united into a tube open in front, glued to the hinder leaflet of the nectary. Anthers linear, acute, two-celled, yellow, frequently spiral. Germ three-cornered, attenuated at the base, retuse at the tip, white. Style filiform, three-sided. Stigma triangular, perforated, yellow, obtuse, bent in. Capsule fleshy, becoming black.

Native of the West-Indies, in moist mountain woods, flowering in spring^a. This beautiful plant grows wild in most of the cooler mountains of Jamaica, and thrives very luxuriantly in every rich and well-shaded gully among the woods.

The flowers have five perfect filaments shooting from the bottom of the real flower-leaf, and one imperfect filament from the nectarium. The berries are small and succulent, and contain each three hard rugged seeds^b.

The younger Linneus, in the *Supplementum Plantarum*, has confounded three plants under the name of *Heliconia Bihai*; namely this, *Strelitzia Reginae*, to which the specific difference and description there given belong, and *Heliconia*, or rather *Strelitzia alba*. —*Heliconia Bihai*, was introduced into the royal garden at Kew in 1786, by Mr. Alexander Anderson^c.

2. This plant bears a great resemblance to *Canna*, and grows to the height of eight feet, with a simple smooth stem. Leaves ovate-lanceolate, entire, acute, very smooth, marked with parallel nerves: petioles sheathing, smooth. Spadix simple. Spathes fewer (four to six), alternate, distich, somewhat remote, divaricated, two inches long, sheathing at the base, acute, coloured blood-red, many-flowered. Flowers pedicelled, crowded, upright, an inch long, fulvous; on round peduncles, half an inch long. Corolla three-sided: the two upper petals erect, linear, acute, keeled, converging, glued to the nectary, the uppermost only

trifid: the lower petal embracing the upper petals and nectary at the base, a little wider, keeled, ventricose, brownish green at the top. Hinder leaf of the nectary the length of the petals, lanceolate, concave, a little curved inwards, acuminate, entire, striated, including the stamens: front leaf many times smaller, awl-shaped, concave, inserted at the base into the lower petal. Filaments five, included within the hinder leaf of the nectary, free at the base. Anthers linear, two-celled, white. Germ three-sided, truncate. Style slightly three-sided, filiform. Stigma blunt, three-sided, bent in, pubescent. Fruit three-cornered, truncate-depressed, scarlet at top. Native of Jamaica, in wet parts of the woods, on the highest mountains^d: and in several parts of South America.

3. Stem and leaves very smooth. Spadix a span long, hirsute, the joints thickened towards the next spathe. Spathes alternate, in two rows, lanceolate-awl-shaped, channelled, ascending, the lower ones larger, with a hispid keel. Peduncles from nine to twelve, in the axils of the spathes, upright, round, very hirsute, short, leafless, one-flowered, furrounded at the sides both ways with awl-shaped flat spathes or bractes, shorter than the flower, lying over each other in a single row, within the cavity of the larger spathe. Germ obtuse, hispid, obtusely three-sided. Corolla curved, two-petalled: upper petal complicated, hispid, bifid at the tip; lower broader, complicated, hispid, oblong, with a brown mark on the inside at top. Nectary lanceolate, fastened by the back to the upper petal. Stamens five, the length of the corolla. Style filiform. Stigma headed. In stature and leaves this resembles the other species: the pericarp is the same with that of *H. psittacorum*, only hispid.

Found in South America by Mutis^e.

HELICONIA. See *Strelitzia*.]

HELICTERES. (From *ελίξ*, spiral: so named on account of the spiral form of the fruit.)

Lin. gen. n. 1025. *Reich.* 1114. *Schreb.* 734.

Jacqu. amer. 235. *Gartn. t.* 64. *Juss.* 278.

Hora. Plum. 37.

Class. 20. 6. Gynandria Decandria.

— 10. 1. Decandria Monogynia. *Schreb.*

— 16. 5. Monadelphina Decandria. *Swartz.*

Nat. order of *Columniferae*.—*Malvaceae*, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, tubulous, half-ovate, obliquely spreading, unequally five-cleft, coriaceous.

COR. *Petals* five, oblong, equal in breadth, fixed to the receptacle, longer than the calyx: *claws* long, with a tooth on each side at the base.

Nectary of five petal-shaped, lanceolate, very small leaflets, covering the germ.

STAM. *Filaments* five, ten or more, very short. *Anthers* oblong, lateral.

PIST. *Receptacle* filiform, very long, bowed back, bearing an ovate germ at the tip. *Style* subulate, longer than the germ. *Stigma* subquincifid.

PER. *Capsules* five, often twisted spirally, one-celled.

SEEDS very many, angular.

OBS. In some species *Jacquin* and others have observed dodecandrous and polyandrous flowers, and straight capsules. One species has no corolla.

ESSENTIAL CHARACTER.

Pentagynous. Cal. one-leafed, oblique. *Petals* five.

Nect. of five leaflets. *Caps.* five, twisted.

SPECIES.

1. *Helicteres baruensis*. Small-fruited Screw-tree.

Lin. syst. 825. *Reich.* 4. 63. *mant.* 122. *Jacqu.*

amer. 236. *t.* 149. *piet.* 116. *t.* 227. *Pluk. alm.*

t. 245. *f.* 2. *Gartn. fruct.* 1. 308.

H. *Hora* α. *Lin. spec.* 1366. *Mill. dict.* n. 2.

Decandrous; leaves cordate, serrate; fruit twisted with straight tips.

2. *Helicteres Hora*. Great-fruited Screw-tree.

Lin. syst. 826. *Reich.* 4. 64. *Mill. dict.* n. 1.

H. *jamaicensis*. *Jacqu. amer.* 235. *t.* 179. *f.* 99.

piet. 115. *t.* 226. *hort.* *t.* 143. *Swartz. prodr.* 98.

obs. 345. *Brown. jam.* 330.

^a Swartz.

^b Browne.

^c Hort. kew. & Swartz.

^d Swartz.

^e Linn. suppl.

H. Ifora β. *Lin. spec.* 1366.

Decandrous; leaves cordate, serrate; the whole fruit twisted. (Leaves elliptic, subcordate; fruit subulate at the tip. Sw.)

[3. *Helicteres hirsuta*.

Loureiro cochinch. 530. 2.

Decandrous: leaves cordate, serrate: fruit five-celled, straight, very hirsute.

4. *Helicteres undulata*.

Loureiro cochinch. 531. 3.

Decandrous: leaves lanceolate, waved: flowers in heaps: siliques five, stellate.

5. *Helicteres angustifolia*.

Lin. spec. 1366. *syft.* 826. *Reich.* 4. 64. *Osbeck itin.* 232. t. 3. *Loureiro cochinch.* 530.

Decandrous: leaves lanceolate quite entire, fruit ovate straight.

6. *Helicteres pentandra*.

Lin. syft. 826. *Reich.* 4. 64. *mant.* 294.

Spiriploca. Allamand Mfs.

Pentandrous; leaves ovate, floral leaves coloured.

7. *Helicteres carthagenensis*.

Lin. spec. 1366. *syft.* 826. *Reich.* 4. 65. *Jacqu. amer.* 237. t. 150. *piet.* t. 228.

Polyandrous; leaves cordate, serrate; fruit oblong, straight.

8. *Helicteres paniculata*.

Loureiro cochinch. 531. 4.

Polyandrous: leaves ovate, acute: flowers panicled: siliques five, stellate.

9. *Helicteres apetala*.

Lin. spec. 1366. *syft.* 826. *Reich.* 4. 65. *Jacqu. amer.* 238. t. 181. f. 98. *piet.* 116. t. 263. f. 74.

Hernand. mex. 383. 459.

Dodecandrous, apetalous; leaves five-lobed, siliques divaricate.

DESCRIPTIONS, &c.

Shrubs or trees, natives of the East or West Indies, mostly tomentose. Leaves alternate. Peduncles axillary, few-flowered.

1. This is an upright tree, about twelve feet in height, branching but little. The younger branches, peduncles and petioles are tomentose. Leaves acute, wrinkled, tomentose and whitish underneath, somewhat hairy on the upper surface, petioled, alternate, deciduous. Stipules awl-shaped. Peduncles many-flowered, terminating, thick. About the pedicels are large, depressed, green glands, uncertain in number, black when dried. The flowers have no scent. Calyx greenish yellow, with a white excavation, and lips sometimes entire or scarcely divided. Petals whitish. Anthers yellow, having a transverse groove where they are fastened to the filaments, so that they seem to be two, and so large as to cover the nectary, germ and filaments^a. Capsules growing on a very long, filiform common receptacle, of a suberose-coriaceous substance, spiral, but always with the top straight, on one side rounded, varicose, pubescent, on the other smooth, compressed to an edge, one-celled, one-valved, opening by the inner suture. Seeds about fifty in each capsule, obovate, angular, smooth, of a brown chestnut colour^b. The bark of the trunk and principal branches being easily peeled off and very tough is used instead of ropes.—Native of the island of Baru, in woods near the coast^c: of the West Indies. Cultivated in 1739 by Mr. Miller^d.

2. This also is a small upright tree, about twelve feet high, branching but little. Younger branches, peduncles, calyxes and leaves tomentose. Leaves petioled, alternate, acute. Stipules in pairs, bristle-shaped. Peduncles many-flowered, terminating, glandular. Calyx subcampanulate, unequally five-toothed. Petals white, obtuse, reflex. Germ five-grooved, protruded beyond the flower on a very long pedicel, calyced with five peculiar leaflets. Filaments ten, upright, without the calyx of the germ, which is wholly covered by the transverse oblong anthers. Capsules twisted spirally into an ovate fruit; their tips make one revolution, and are covered with a close nap, which is finally worn off by the weather before they fall. Seeds angular, ovate^e.

^a Jacquin.

^b Gartner.

^c Jacquin.

^d Hort. kew.

^e Jacquin.

This curious shrub, as Browne calls it, is very frequent in the low gravelly hills of Jamaica. It was cultivated in 1739, by Mr. Miller; and flowers here in June and July^f.

3. Stem shrubby, six feet high, upright, round, hairy; with diffused branches. Leaves pointed, tomentose, petioled, large. Peduncles many-flowered, axillary. Calyx with a long, curved, hairy, coloured tube; border short, four-cleft, the upper segment emarginate. Corolla dusky purple; petals turbinate-oblong, unequal, converging, with a toothlet above the base on each side; claws long, sticking into the receptacle. Filaments short, nearly equal, ending at bottom in a long, bent tube, placed on the receptacle: anthers ovate, two-celled, incumbent. Germ five-cornered, elevated on a long pedicel to the mouth of the staminate tube: style filiform, slender, longer than the stamens: stigma thickish, very small. Capsule oblong, five-valved, five-celled, blunt, rough with very many long, branching, harsh hairs; seeds bony.

In this and the fifth sort the stamens are not Gynandrous, but rather Monadelphous; nor ought the pedicel supporting the germ to be looked upon as a receptacle, for it is entirely detached from the stamens. Native of Cochinchina, in woods.

4. This is a middling-sized tree with spreading branches. Leaves quite entire, smooth, petioled. Flowers small, mostly terminating. Calyx none. Corolla greenish red. Anthers sessile, two-celled, placed on the germ at the base. Germ five-cornered, peduncled: style filiform, reflex: stigma orbiculate, five-parted. Siliques oblong, thick, scarlet, straight above, convex underneath. Seeds few, ovate, smooth, brown, fleshy, adhering to each valve by their proper pedicels. Native of Cochinchina, in woods^g.

5. Stem shrubby, five feet high, upright, branched. Leaves shining on the upper surface, veined underneath, tomentose, petioled, alternate. Flowers pale purple, on two-flowered, axillary peduncles. The calyx has a long, crooked tube, with a short four-cleft border, the upper cleft emarginate. Petals rounded, small, with a toothlet at the base. Filaments very short, united into a long tube; with incumbent anthers. Style nearly equal to the stamens. Capsules united into one oblong-ovate, straight, pedicelled fruit. Native of China, about Canton^h.

6. Leaves alternate, acuminate, serrate; the floral leaves dusky purple. Calyxes hispid with branching bristles. Petals the length of the calyx. Stamens five. Capsules twisted, hairy.—Native of Surinamⁱ.

7. An upright tree, about twelve feet high. Leaves tomentose on both sides. Flowers extremely fetid, generally coming out with the leaves, but sometimes before them. Calyx brownish yellow. Petals purple. It has so much the habit of the first sort, that it can hardly be distinguished from it, except in the flower and fruit.—Native of Carthage in New Spain, in woods; flowering there in June and July^k.

8. This is a large tree, with spreading branches. Leaves quite entire, flat, smooth, petioled. Flowers in loose panicles, mostly terminating. Calyx none. Corolla of a reddish colour, and spreading very much. Anthers sessile, more than twenty, adhering laterally to the middle of the germ. Style filiform, curved; with a convex, emarginate stigma. Siliques oblong, two-valved, red.—Native of Cochinchina, in woods^l.

9. This is an elegant tree, forty feet in height, with a large handsome head. Leaves plaited, smooth above, subvillose beneath, upwards of a foot in diameter, numerous; lobes ovate-roundish, acute, quite entire; on round petioles, nine inches in length. Flowers numerous, very fetid, dirty yellow with purple spots, without either petals or nectary; in large loose panicles at the ends of the twigs. It is apparent that the filaments are the continuation of the bark or outer part of the receptacle; but that the germ springs from the pith of it.—Native of Carthage, in woods, flowering from May and June to September^m.]

^f Hort. kew.

^g Linn. mant.

^h Loureiro.

ⁱ Jacquin.

^k Jacquin.

^l Ibid.

^m Loureiro.

PROPAGATION AND CULTURE.

These plants are propagated by seeds, which must be sown upon a hot-bed in the spring, and when the plants are come up strong enough to remove, they should be each planted in a separate small pot, filled with light earth, and plunged into a moderate hot-bed of tan, observing to shade them from the sun till they have taken new root; then they should be treated in the same way as other tender plants from hot countries, raising the glasses every day in proportion to the weather, that the plants may enjoy fresh air, which will strengthen them, and prevent their drawing up weak. In the summer the plants may remain under the frames, if there is sufficient height for them to grow; but in autumn they must be plunged into the tan-bed in the stove, where they should always remain, being careful to shift them into larger pots when they require it, and not give them too much wet in the winter; but in summer they should have a large share of air in warm weather, and require to be often refreshed with water: the second year from the seeds these plants have often flowered in the Chelsea garden, and the seeds have some years ripened there, but the plants will live several years with proper management.

HELIOCARPUS. (From *ἥλιος*, the sun, and *καρπος*, fruit, which being surrounded by rays, resembles the sun, as it is commonly represented.)

Lin. gen. n. 606. *Reich.* 662. *Schreb.* 829. *Gærtn.* t. 49. *Juss.* 290. *Montia. Houst. Philos. transf.*

Class. 11. 2. Dodecandria Digynia.

Nat. order of Columniferae. Tiliaceae, Juss.

GENERIC CHARACTER.

CAL. Perianth four-leaved, coloured: leaflets linear, long, broadish, spreading, deciduous.

COR. Petals four, linear, much shorter than the calyx, narrower.

STAM. Filaments sixteen, awl-shaped, almost the length of the calyx. Anthers twin, linear, incumbent.

PIST. Germ roundish. Styles two, simple, upright, length of the stamens. Stigmas acute, distant.

PER. Capsule turbinate-ovate, peduncled, compressed, surrounded perpendicularly on both sides with rays pinnately branched; two-celled, two-valved; with the partition contrary.

SEEDS solitary, subovate.

ESSENTIAL CHARACTER.

Cal. four-leaved. *Cor.* four-petalled. *Styles* simple.

Caps. two-celled, compressed, longitudinally radiated on both sides: (superior, club-shaped, surrounded with filiform feathered rays, G.)

SPECIES.

1. *Heliocarpus americana.* American *Heliocarpus*.

Lin. spec. 643. *Reich.* 2. 430. *hort. cliff.* 211. t. 16. *Trew Euret. t.* 45. *Gærtn. fruct.* 225.

DESCRIPTION, &c.

It rises with a thick, soft, woody stalk, from fifteen to eighteen feet high, sending out several lateral branches towards the top. Leaves heart-shaped, full of veins, ferrate, ending in acute points, alternate, on oblique petioles three inches long. The flowers are produced at the ends of the shoots, in branching clusters, and are of a yellowish green colour.

[Capsule pubescent, surrounded with feathered bifid rays; having a single seed in each cell, keeled on one side, flattish on the other, with a slight groove at bottom, of a brownish bay colour, fastened to a small tubercle in the middle of the partition.]

This tree is very nearly allied to *Triumfetta*. The calyx is four-leaved, and the corolla four-petalled; both are of a whitish or herbaceous colour, and have the appearance of a corolla with eight petals.]

It was discovered by Dr. Houstoun (before 1733), growing naturally about La Vera Cruz in New Spain, whence he sent the seeds to England; they succeeded, produced flowers, and ripe seeds during several years in the Chelsea garden.

PROPAGATION AND CULTURE.

This plant is propagated by seeds, which must be sown upon a hot-bed in the spring; and when the plants are fit to remove, they should be each planted

in a separate small pot filled with light kitchen-garden earth, and plunged into a hot-bed, treating them in the same way as other tender plants, which will not bear the open air in this country at any season of the year; and while the plants are young, they require to be plunged into the tan-bed, but after they have acquired strength, they will thrive in the dry stove. In winter they should have but little water, and must be kept warm; but in summer they should have plenty of fresh air in mild weather, and must be frequently refreshed with water. With this management the plants will flower the third year, and produce good seeds, but may be preserved several years with proper care.

I have sowed the seeds of this plant which had been kept ten years, and came up as well as if it had been sowed the former year; though from the appearance of the seeds, it seems as unlikely to grow after the first year as any which I know.

HELIOPHILA. (From *ἥλιος*, the sun, and *φίλος* a friend. These plants being fond of sun-shine.)

Lin. gen. n. 816. *Reich.* 880. *Schreb.* 1092.

Juss. 238.—*authore Nic. Burmanno, in nov. act.*

ups. 1. 94. t. 7.—*Chamira Thunb. nov. gen.* 48.

Class. 15. 2. Tetradynamia Siliquosa.

Nat. order of Siliquosae.—Cruciformes. Cruciferae, Juss.

GENERIC CHARACTER.

CAL. Perianth four-leaved: leaflets spreading, oblong, concave, membranaceous at the edge, deciduous: the two outer ones bladdery at the base.

COR. four-petalled, cruciform: petals roundish, flat, sessile.—*Neetaries* two from the receptacle, bowed back towards the bladder of the calyx.

STAM. Filaments six, awl-shaped, erect, the length of the calyx, two opposite a little shorter. Anthers oblong, erect.

PIST. Germ cylindric. Style shorter than the germ. Stigma blunt.

PER. Siliqua columnar, somewhat torulose, mucronate, two-celled, two-valved.

SEEDS several.

ESSENTIAL CHARACTER.

Neetaries two, bowed back towards the bladder of the calyx.

SPECIES.

1. *Heliophila integrifolia.* Whole-leaved *Heliophila*.

Lin. spec. 926. *Juss.* 598. *Reich.* 3. 268. *mant.* 428.

Schreb. in act. ups. nov. 1. 94. t. 7. *amæn.* 6.

afr. 23. (Cheiranthus). *Herm. lugdb.* 364. t. 365.

Seba mus. 1. t. 17. f. 5. (Leucoium). *Pluk. phyt.*

t. 432. f. 2. (Nasturtium).

Leaves lanceolate undivided.

2. *Heliophila coronopifolia.* Buck's-horn-leaved *Helioph.*

Lin. spec. 927. *Reich.* 3. 268. *Herm. lugdb.* 364.

t. 367. *Seba mus.* 1. t. 17. f. 5. *Pluk. alm.*

t. 200. f. 3. *bad.* (Leucoium).

Leaves linear pinnatifid.

[3. *Heliophila amplexicaulis.*

Lin. Juss. 598. *suppl.* 296.

Leaves stem-clasping entire smooth, siliques necklace-shaped.

4. *Heliophila incana.* Hoary *Heliophila*.

Ait. hort. kew. 2. 397. *Burm. in nov. act. ups.* 1. 94.

t. 7.

Leaves spatulate quite entire pubescent, siliques villose.

5. *Heliophila filiformis.* Divaricated *Heliophila*.

Lin. Juss. 598. *suppl.* 296.

Leaves subulate filiform smooth, siliques pendulous, branches divaricate.

6. *Heliophila pusilla.* Dwarf *Heliophila*.

Lin. Juss. 598. *suppl.* 297.

Leaves linear, siliques necklace-shaped upright.

7. *Heliophila flava.*

Lin. Juss. 598. *suppl.* 297.

Leaves linear, stems shrubby rushy.

8. *Heliophila circæoides.*

Lin. Juss. 599. *suppl.* 298.

Chamira. Thunb. nov. gen. 48.

C. cornuta. Lin. Juss. 597.

Leaves cordate.

9. *Heliophila digitata*.*Lin. syst.* 599. *suppl.* 296.*Leaves palmate-pinnatifid villose: pinnae linear.*10. *Heliophila pinnata*.*Lin. syst.* 599. *suppl.* 297.*Leaves trifid and pinnate; leaflets linear: siliques necklace-shaped upright.*

DESCRIPTIONS, &c.

These are all natives of the Cape of Good Hope.]

1. Stalk erect, four or five inches high, sending out two or three side branches. [Leaves rough with hairs on the upper surface, smooth underneath. The bladders or bunches at the base of the calyxes are diaphanous.] The flowers grow in a loose terminating bunch, and have no scent. [The corolla resembles that of Flax or *Anagallis Monelli*: is blue, and closes at night^a.] The pods are near three inches long, taper, and contain a double row of flat seeds.

[Cultivated by Mr. Miller in 1768^b.

2. This is a smooth plant^c.] It grows about the same height with the other, but branches more. The flowers are like those of the foregoing.

[Cultivated by Mr. Miller in 1768.—It flowers from June to October, and is shrubby^d. According to Mr. Miller these are both annual plants.

3. Found at the Cape of Good Hope with most of the other sorts by Thunberg.

4. Shrubby. Flowering in May and August. Introduced in 1774, by Mr. Francis Maffon^e.

5. Annual. Stem half a foot high, herbaceous, rushy: branches upright, shorter. Racemes horizontal, on horizontal pedicels. Calyx expanding very much; leaflets alternate with the petals, linear, channelled, blunt. Petals spreading as the calyx does, but near three times as large, pale, streaked. Silique awl-shaped, stiff, very smooth and even^f. It flowers in July and August. Introduced in 1786, by John Sibthorp, M. D.^g

6. Annual. A span high, upright, branched, the stature of *Arabis thaliana*. Stem-leaves linear, smooth and even. Siliques patulous, peduncled; the joints separate, orbicular, compressed.

7. Shrubby, having the appearance of Broom, upright, sparingly branched, stiff. Leaves alternate, remote, smooth and even. Racemes terminating, long, simple; the flowers distant. Calyx very short, ovate, closed, blunt, somewhat scarious about the edge. Petals obovate, the same size as in the Cabbage, yellow, veiny; the claws longer than the calyx. Stamens the length of the calyx. Germ ovate. Silique the length of the petals, columnar with four blunt angles. It varies with red corollas.—It is doubtful whether this be a natural species of this genus.

8. Stem brittle, branched, herbaceous. Leaves somewhat angular. Calyx with the leaflets closed, linear, gaping at the base, deciduous; two opposite ones with something like a spur at the base; the protuberance half the length of the leaflets. Petals oblique. Anthers reflex at the tip. Germ ovate-oblong. Valves of the silique convex, gibbous, juicy: partition globular, fleshy, standing out beyond the valves. Seeds three or four, roundish^h.

It is thus described by Thunberg, under the name of *Chamira cornuta*.

The whole plant is succulent, weak, smooth. Root fibrous, annual. Stem one or more procumbent or subscandent, somewhat angular at bottom, round at top, smooth. Branches alternate, gradually growing thinner to the end. Leaves alternate, petioled, cordate-roundish, acuminate, tooth-angled; the lower larger; the upper regularly less, nerved. Petioles semicolumnar, channelled above, shorter than the leaf, spreading. Flowers alternate, very remote, but towards the end nearer, peduncled. The flowering peduncles erect, a line in length, bearing one flower: fruit peduncles reflected.

9. The stem thickens very much upwards, which gives this plant a singular appearance.

^a Linn. mant.^b Hort. kew.^c Linn. spec.^d Hort. kew.^e Ibid.^f Linn. suppl.^g Hort. kew.^h Linn. suppl.

10. This resembles the sixth species very much, but it has branched or pinnate leavesⁱ.]

PROPAGATION AND CULTURE.

The seeds may be sown in the spring on a south border, and when the plants come up, if they are thinned and kept clean from weeds, it is all the culture they require.

HELIOTROPE. See *Heliotropium*.HELIOTROPII FLORE. See *Tournefortia*.

HELIOTROPIUM. (From *ἥλιος*, the Sun, and *τρέπω*, to turn. Because the leaves or flower were supposed to turn with the sun. Hence the French name *Turnsole*. Or because it flowered about the summer solstice.)

Lin. gen. n. 179. *Reich.* 191. *Schreb.* 239. *Tournef.**t.* 57. *Gartn. t.* 68. *Juss.* 130.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Asperifoliae*.—*Borragineae*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, tubular, five-toothed, permanent.

COR. monopetalous, falver-shaped: tube the length of the calyx: border flat, half-five-cleft, obtuse: clefts smaller, alternate, more acute, between the larger ones: throat naked.

STAM. Filaments five, very short, in the throat. Anthers small, covered.

PIST. Germs four. Style filiform, length of the stamens. Stigma emarginate.

PER. none. Calyx erect, unchanged, cherishing the seeds in its bosom. (Berry, G.)

SEEDS four, ovate, acuminate. (Nuts four, naked or corticate, not perforate, G.)

ESSENTIAL CHARACTER.

Cor. falver-shaped, five-cleft, with teeth interposed: throat closed with arches.

SPECIES.

1. *Heliotropium peruvianum*. Peruvian Turnsole or *Heliotrope*.

Lin. spec. 187. *syst.* 184. *Reich.* 1. 380. *Murr. prodr.* 141. *Mill. fig. t.* 144. *Curt. magaz. t.* 141.

Leaves lanceolate-ovate, stem shrubby, spikes numerous aggregate-corymbed.

2. *Heliotropium indicum*. Indian Turnsole or *Heliotrope*.

Lin. spec. 187. *Reich.* 1. 380. *fl. zeyl. n.* 70. *hort. cliff.* 45. *Murr. prodr.* 141. *Swartz obs.* 54. *Dodart. mem.* 83. *Pluk. phyt. t.* 245. *f.* 4. *Loureiro cochinch.* 103.

β. *H. horminifolium*. *Mill. dict. n.* 3. *Herm. lugdb.* 307. *Sloan. jam.* 98. *Sabb. hort. rom. 2. t.* 34.

Leaves cordate-ovate acute somewhat scabrous, spikes solitary, fruits bifid.

[3. *Heliotropium parviflorum*. Small-flowered Turnsole or *Heliotrope*.

Lin. syst. 184. *Reich.* 1. 380. *mant.* 201. *Brown. jam.* 151. 2. *Dill. elth.* 178. *t.* 146. *f.* 175. *Burm. zeyl.* 121. *Fl. zeyl. n.* 470. *Raii suppl.* 271.

H. angiospermum. *Murr. prodr.* 217.

Leaves ovate wrinkled scabrous opposite and alternate.

4. *Heliotropium inundatum*.

Swartz prodr. 40.

Leaves oblong obtuse hirsute, spikes in fours erect, stem shrubby.]

5. *Heliotropium europæum*. European Turnsole or *Heliot.*

Lin. spec. 187. *Reich.* 1. 381. *hort. upf.* 33. *cliff.* 45. *Hall. belv. n.* 593. *Scop. carn. n.* 184. *Pollich. pal. n.* 180. *Jacqu. austr. 3. t.* 207. *Krock. fles. n.* 263. *Murr. prodr.* 141. *Sabb. hort. 2. t.* 33. *Berg. phyt. 2. 15. Plenck, ic. t.* 74. *Villars dauph. 2. 450.*

H. vulgare. *Bocc. sic. t.* 49.

H. majus. *Clus. hist.* 46. 6. *Baub. pin.* 253. *Ger. herb.* 264. *emac.* 334. *Park. theat.* 438. *Raii hist.* 501.

[β. *H. ficulum majus flore amplo odorato*. *Bocc. sic. Raii hist.* 501. 2.

Leaves ovate quite entire tomentose wrinkled, spikes conjugate.

ⁱ Linn. suppl.

6. *Heliotropium malabaricum*.
Retz. obs. 4. n. 73. Burm. ind. 40. t. 16. f. 1.
Leaves ovate plaited strigose quite entire, spikes almost solitary.
7. *Heliotropium supinum*. Trailing Turnsole or Heliot.
Lin. spec. 187. Reich. 1. 381. Gouan monsp. 17. fig. Clus. hist. 2. 47. Ger. emac. 335. 3. Raii hist. 501.
H. minus supinum. Baub. pin. 253. Baub. hist.
H. majus supinum. Park. theat. 438. n. 2.
Leaves ovate quite entire tomentose plaited, spikes solitary.]
8. *Heliotropium fruticosum*.
Lin. spec. 187. Reich. 1. 381. amæn. 4. 394.
Swartz obs. 55. Brown. jam. 151. 4. Sloan. jam. 1. 214. t. 132. f. 4.
Tournefortia humilis. Lin. syst. 191. 5.
Leaves linear-lanceolate hairy, spikes solitary sessile.
9. *Heliotropium curassavicum*. Glaucous Turnsole or Heliotrope.
Lin. spec. 188. Reich. 1. 382. mant. 333. hort. cliff. 45. upf. 33. Gært. fruct. 1. 329. Burm. ind. 41. t. 16. f. 2. Pluk. alm. t. 36. f. 3.
Brown. jam. 151. 3. Sloan. jam. 1. 213. t. 132. f. 3. Mor. hist. 3. 452. f. 11. t. 31. f. 12. Herm. parad. t. 183.
Leaves lanceolate-linear smooth without veins, spikes conjugate.
- [10. *Heliotropium orientale*.
Lin. spec. 188. Reich. 1. 382.
Leaves linear smooth without veins, flowers scattered lateral.]
11. *Heliotropium gnaphalodes*.
Lin. spec. 188. syst. 184. Reich. 1. 382. Jacqu. amer. 25. t. 173. f. 11. pict. 19. t. 259. f. 9.
Mor. t. 28. f. 6. Sloan. jam. 1. 213. Pluk. alm. t. 193. f. 5.
Leaves linear obtuse tomentose, peduncles dichotomous, flowers of the spikes in fours, stem frutescent.
- [12. *Heliotropium scabrum*.
Retz. obs. 2. n. 7.
Leaves lanceolate strigose, stem branched diffused, flowers heaped.
13. *Heliotropium marifolium*.
Retz. obs. 2. n. 8.
Leaves lanceolate hispid, stems procumbent somewhat shrubby, spikes simple alternate.
14. *Heliotropium coromandelianum*.
Retz. obs. 2. n. 9. Vahl symb. 1. 13. Forsk. descr. 8. (Lithospermum).
Leaves obovate villose entire, spikes simple and conjugate, seeds dotted.]
15. *Heliotropium capitatum*.
Mill. dict. n. 4.
Leaves oblong-ovate quite entire smooth hoary underneath, flowers in axillary heads, stem arborescent.
16. *Heliotropium canariense*.
Mill. dict. n. 5.
Leaves ovate crenate opposite, flowers in dichotomous axillary heads, stem arborescent.
17. *Heliotropium procumbens*.
Mill. dict. n. 10.
Stem procumbent, leaves ovate tomentose quite entire, spikes solitary terminating.
18. *Heliotropium americanum*.
Mill. dict. n. 11.
Leaves oblong-ovate tomentose, spikes conjugate terminating, stem shrubby.
- [19. *Heliotropium tetrandrum*.
Loureiro cochinch. 103.
Leaves ovate-lanceolate, smooth, opposite: spikes heaped, terminating.
20. *Heliotropium undulatum*.
Vahl symb. 1. 13. Forsk. descr. 38. n. 24. (Lithospermum).
Leaves lanceolate hispid rolled back at the edge waved, spikes conjugate, corollas villose, stem procumbent.
21. *Heliotropium lineatum*.
Vahl symb. 1. 13. Forsk. descr. 39. n. 25. (Lithospermum).
Leaves elliptic petioled villose rolled back at the edge flat, spikes conjugate, stem procumbent.

22. *Heliotropium ternatum*.
Vahl symb. 3. 21.
Leaves in threes and alternate lanceolate hoary underneath, spikes terminating conjugate.
23. *Heliotropium pinnatum*.
Vahl symb. 3. 21.
Leaves pinnate.
24. *Heliotropium amplexicaule*.
Vahl symb. 3. 21.
Leaves lanceolate obtuse half-stem-clasping, spikes branching, stem shrubby.]

DESCRIPTIONS, &c.

1. This rises with a shrubby stalk from two to three feet high, dividing into many small branches. Leaves three inches long, and an inch and half broad in the middle, hairy, greatly veined, and ash-coloured on their under side, on short foot-stalks. The flowers are produced at the ends of the branches in short reflex spikes, growing in clusters: the peduncles divide into two, or three, and these again into smaller ones, each sustaining a spikelet of pale blue flowers, which have a strong sweet odour, [of a very particular nature, somewhat resembling that of bitter Almonds.

Stems rough with hairs, with branches longer at bottom. Leaves elliptic or ovate-oblong, marked with lines, wrinkled, pubescent and scabrous. Peduncles towards their extremities rough with hairs, bifid or dichotomous. Spikes directed one way, bowed back^a. There are usually three or four in number, coming out from different points, about an inch in length. The corolla has a very short globular tube, spreading into a wide border. Seeds almost globular, distinct, fixed to a cylindric prominence, in the middle^b.]

It grows naturally in Peru, whence the seeds were sent by the younger Jussieu to the royal garden at Paris. Mr. Miller had the seeds (about the year 1757) from the curious garden of the Duc d'Ayen at St. Germain's. It flowers here great part of the year, and those flowers which come out in summer, are succeeded by ripe seeds in autumn.

2. [Stem herbaceous, a foot and half or two feet high, round, scabrous, hirsute, subdivided. Leaves cordate-spatulate, ovate, slightly serrate, wrinkled, nerved, hairy, softish:] on pretty long petioles, two inches and a half long, and one and a half broad in the middle. [Spikes terminating, single or solitary, sometimes but very seldom double; sometimes also from the sides of the branches, reflex only at the end. Flowers sessile, pointing one way, approximating in a double row, small, blue: tube very long, cylindric, not globular, as in the others, border scarcely half-five-cleft, segments equal, blunt; throat five-rayed, orange-coloured, closed. Germs in connate pairs. Seeds one-celled; two, three, or four of unequal sizes, and if more than two, the rest are abortive: the fertile ones are ovate, acuminate, swelling a little on the outside, covered with a juicy bark, and slightly connected at the base^c.]

Native of the West Indies, and CochinChina. Annual, or biennial. It flowers in July and August; the seeds ripen in September and October. [Cultivated in 1713^d.

The variety, which Mr. Miller makes a distinct species] is a smaller plant, seldom above two feet high; the leaves are an inch and half long, and about half an inch broad: the spikes of flowers are very slender, and not more than two inches long; the flowers are small, and of a light blue colour.

[3. Nearly allied to the foregoing. Stem erect, pubescent, a foot high. Most of the leaves opposite, except those in the middle of the stem, which are alternate, petioled, lucid, acute. Peduncles opposite to the leaves, or from the divisions of the stem, longer than the leaves, erect; each having two recurved, imbricate spikes. Corolla minute, pervious, white with a yellow base^e. The seeds are contained in a roundish capsule, with four cells, and one seed in each^f.

Annual. Native of the West Indies. It flowers in

^a Linn. syst. ^b Murr. prodr. ^c Murr. prodr. and Swartz.
^d Hort. kew. ^e Linn. mant. ^f Murr. prodr.

july and august. Cultivated in 1732, by James She-
rard, M.D.⁸.

The seeds came up in earth sent with Barbadoes
plants to Mr. Newport a merchant in London, and
which he gave to the Eltham garden ^h.

4. Native of the Caribbee islands ¹.]

5. This rises about seven or eight inches high, di-
viding into two or three branches. Leaves rough, two
inches long and one inch broad in the middle, of a light
green, standing upon pretty long foot-stalks alternately:
the flowers are produced at the ends of the branches in
double spikes, joined at the bottom, about an inch
long, turning backward. Flowers white, appearing in
june and july.

[Seeds four, naked, equal, ovate, convex on the
outside, with a smooth, juicy bark; on the inside, where
they are joined divided into two planes by a prominent
angle without bark ^k.—Cultivated in 1562, by William
Turner, M.D.¹

β. Flowers larger and sweet ^m.

6. Burman has figured this as a variety of the fore-
going species; it is easily distinguished from it how-
ever, by the strigoseness of the whole plant, by the
plaits and smallness of the leaves, by the shortness of
the petioles, and by the spikes not being conjugate,
though they are frequently two together. The calyxes
are by no means imbricate, but larger and distinct, in-
volving the seeds even when they are ripe.—Native of
Malabar ⁿ.

7. This is smaller than the common sort (n. 5.),
with more slender branches, somewhat lanuginous, and
prostrate. The root small and annual. Flowers white.
Seeds usually one or two only, the rest being abortive;
larger and more oblong than in the common sort,
brown, and covered with a bark ^o.—Native of the
Cape of Good Hope; flowering in june and july.
Cultivated in 1640 ^p.

8. Stem shrubby, two feet high (Miller says, one
foot and a half, and Browne that it seldom rises above
five or six inches) very much branched: branches stiff,
scabrous and ash-coloured. Leaves on short petioles,
alternate, small,] scarcely one inch long, and one third
of an inch broad in the middle, [acute, rigid, rolled
back at the edge, recurved at the tip, hirsute and his-
pid on the upper surface, hirsute and hoary on the
lower ^q. Spikes always single, and not much bent,
small and slender. Flowers terminating, on short pe-
dicels, pointing one way; on short, axillary, hispid pe-
duncles. Segments of the calyx upright, stiff. Co-
rolla white; border five-cornered: throat closed, pale,
having five rays from the centre to the angles of the
border. Filaments from the middle of the tube: an-
thers converging and cohering at the tip. Germ ovate:
style short, subulate: stigma capitate. Capsule roundish,
containing two hemispherical seeds ^r.—Native of the
West Indies, near the sea shore. Cultivated by Mr.
Miller, in 1759.

9. Root annual. Stem round, very smooth, with a
glaucous bloom on it.] The branches trail on the
ground, and grow a foot (or sixteen inches) in length.
Leaves somewhat blunt, quite entire, upright, on very
short petioles, some alternate others opposite. [Browne
says, that it is easily distinguished by its whitish smooth
narrow leaves. Spikes in pairs on a common peduncle,
and recurved. Corolla white, with a yellow base, and an
open throat ^s.—The fruit is an ovate-globular berry,
containing four nuts, drying up as it grows ripe, and di-
visible into four parts: flesh thin, becoming the mem-
branaceous bark of the nuts; which are crustaceous,
hard, moderately thick, convex on one side, angular
on the other, and in the middle of the angle having
a deep little pit; they are imperforate and one-celled.
Seeds solitary, ovate-oblong, having a very short beak,
convex on one side, slightly concave on the other,
pale ^t.

Native of the West Indies: flowering here in june
and july. Cultivated in 1759 by Mr. Miller ^x.

⁸ Hort. kew.	^h Dillenius.	ⁱ Swartz.
^k Murr. prodr.	¹ Hort. kew.	^m Boccone.
^o Clusius.	^p Hort. kew. from Park.	ⁿ Retzius.
^q Browne,	^r Swartz.	¹ Linn. mant.
	^x Hort. kew.	^s Gärtner.

10. A small procumbent creeping plant. Leaves
alternate. Flowers subsessile, alternate, solitary, scat-
tered among the leaves.

Annual.—Native of Asia ^v.

11. This is an upright shrubby plant, commonly
two feet high, sometimes but seldom rising to the
height of six feet. Branches round, little divided, the
older ones blackish, the younger scarred at bottom
where leaves have grown, all together forming a con-
vex, white, handsome head, visible far off at sea.
Leaves wedge-linear, veinless, thick, tomentose on
both sides, glaucous, sessile, numerous, crowded at the
ends of the branches. Common peduncles round, to-
mentose, erect, a little longer than the leaves, termi-
nating, few on each branch, bifid or trifid at top;
single pedicels spring from the divisions, and form a
spike directed one way, frequently bifid itself, but
sometimes simple. Flowers small, with the calyxes of
all so connected, that no one can be taken out without
tearing the next. Corolla white ^z.

Native of Cuba, Jamaica, Barbadoes, St. Eustatia,
&c. on the coast. Cultivated by Mr. Miller before
1759.

12. This species bears the appearance of a Sherardia.
The root is simple and fusiform. Stems subdichoto-
mously branched and strigose. Leaves alternate, mostly
oblique, on the uppermost branches sometimes oppo-
site, quite entire. Flowers terminating, small, white,
fenced with leaves. Calyxes nearly equal, hispid,
Seeds four, roundish, smooth, only a little wrinkled
at the tip.—Native of the East Indies. Sent by
Koenig.

13. Root woody. Stems branched, hispid. Leaves
alternate and scattered, sharp, resembling those of Teu-
crium Marum, only smaller. Spikes copious, with-
out order, not compact, with bractes of the same shape
with the leaves. Flowers white, hirsute on the out-
side, as are also the calyxes.

14. Root simple, fusiform. Stems erect and pro-
strate, hispid. Leaves alternate and opposite. Spikes
lateral and terminating. Calyx unequal, hispid. Flow-
ers small, white.—Both natives of the East Indies, and
sent by Koenig ^a. This also is a native of Arabia; the
Arabian plant differing from the Indian, according to
Vahl, only in having the twigs, leaves and seeds more
closely villose and silky.]

15. This sort rises with a shrubby stalk six or seven
feet high; the young branches are closely covered with
a white down, and the leaves on these are very hoary
and entire, but those on the older branches are greener,
and some of them are notched on their edges; at each
joint of the stalks come out two short branches oppo-
site, with small hoary leaves placed opposite: these,
when bruised, emit a strong odour, which to some per-
sons is very disagreeable, but others are pleased with it.
The plants rarely flower in England, for in near forty
years which I have cultivated them, I have but once
seen them in flower. The flowers are white, col-
lected in roundish heads, which turn backward, and
sit close to the branches; the leaves continue all the
year.

16. This sort grows naturally in the Canary Islands.
It rises with a woody stalk three or four feet high, di-
viding into many branches, with leaves upon long foot-
stalks; hairy, and of an ash colour on their under side;
the flowers are produced from the side of the branches
on pretty long peduncles, each sustaining four short
roundish spikes or heads, which divide by pairs, and
spread from each other. The flowers are white, and
appear in june and july, but are not succeeded by seeds
in England. The leaves of this plant, when bruised,
emit an agreeable odour, for which it is by some per-
sons much esteemed; the gardeners have given it
the title of Madam Maintenon, but for what reason I
know not.

17. This sort was sent me from Carthagena
in New Spain, where it grows naturally on the
sandy shores. This is an annual plant, with trailing
stalks which grow six or seven inches long, with small
leaves. The flowers are produced at the end of the

^v Linn. spec.	^z Jacquin.	^a Retzius.
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branches, in single short spikes, which are reflexed; they are small and white, making little appearance.

18. This sort was sent me by the late Dr. Houttoun from La Vera Cruz, where he found it growing in plenty; this rises with a shrubby stalk three feet high, dividing into slender branches, which are closely garnished with leaves, placed without order. The flowers are produced at the end of the branches in double spikes, which are slender, short, and straight, not recurved as the other species. The flowers are small and white, and the plant is perennial.

[The fifteenth was cultivated by Mr. Miller about the year 1728 or soon after; and the eighteenth before 1733.

19. Stem herbaceous, annual, one foot high, somewhat erect, diffused, whitish, obtusely four-cornered, with purple joints. Leaves crenate. Flowers red, in long close spikes: corolla somewhat bell-shaped. Stamens four, nearly equal to the corolla.—In the gardens of Cochinchina^b.

20. Stem woody, hairy, subdichotomous, round. Branches a span long and more. Leaves alternate, narrow-lanceolate; the lower ones narrowing into a very short petiole; the upper ones sessile, half an inch long, bluntish, wrinkled, hispid especially towards the edge; hairs pressed close, placed on minute tubercles. Spikes lateral and terminating, an inch long, compact. Calyx hairy, five-cleft; with linear, blunt segments. Corolla hairy on the outside, longer than the calyx: tube widening in the middle, contracting at top; throat pervious; limb five-cleft, with a tooth-like plait between the clefts. Stigma conical, with two teeth at the tip, surrounded at the base with a ring.

21. Stem shrubby, round, dichotomous, the size of a pigeon's quill. Branches slender, a span long, villose, tomentose above. Leaves half an inch long, acute, soft especially underneath, marked with three lines on both sides. Spikes lateral and terminating. Bractes linear, acute. Calyx villose, with lanceolate segments. Corolla smooth, longer than the calyx; tube widening at top; throat pervious; a tooth between the segments of the limb. Style filiform. Stigma conical, acute, quite entire, villose at the tip. Seeds villose. Distinguished from the foregoing by the form and hairiness of the leaves, with the edge not at all waved; by the presence of bractes; by the smoothness of the corolla; and by the stigma being quite entire.—They are both natives of Arabia, and by their habit, inflorescence and tooth between the segments of the corolla, belong to this genus.

22. Branches round, hoary with small hairs pressed close. Leaves on very short petioles, sharp, rugged on the upper surface with white dots, on which hairs are placed, the edge rolled back above, but flat towards the base. Peduncle terminating, erect, bifid: the lateral ones sometimes with simple spikes. Bracte linear, the length of the calyx; which is hairy. Corolla white, larger than in the other sorts.

Perhaps only a variety of *H. fruticosum*, with broader leaves.—Native of the West Indies.

23. Stem erect, herbaceous, simple, only branching a little at the base, a foot high, the size of a goose quill, villose. Leaves petioled; at the root many; on the stem few, alternate; ternate, or pinnate with two pairs and an odd leaflet. Leaflets alternate, lanceolate, acute, softly villose, greenish ash-coloured, quite entire, flat, nerved; the end one two inches long, usually shorter on one side at the base; the lateral ones sessile, much smaller. Peduncles axillary and terminating. Spikes undivided, very hairy. Flowers crowded. Found by Thouin at the straits of Magellan.

24. Branches hairy. Leaves alternate, two inches long, obscurely repand, a little narrowed towards the base, greenish-hoary on both sides with minute hairs pressed close, smooth along the nerves, but not marked with lines, veinless, nerved underneath. From the axils there are rudiments of branchlets. Peduncle terminating, hairy, twice or thrice dichotomous at top. Tube of the corolla twice as long as the calyx, with fewer villose hairs scattered over it. It has the habit of *H. peruvianum*, and was found in Brasil by Thouin^c.

^b Loureiro.

^c Vahl.

PROPAGATION AND CULTURE.

1. May be propagated either by seeds or cuttings. The seeds may be sown upon a moderate hot-bed in the spring: when the plants are fit to remove, transplant them into small pots filled with light earth, plunge them into a hot-bed, and shade them till they have taken new root; then inure them by degrees to the air, into which remove them in summer, placing them in a sheltered situation: in autumn house them in a good greenhouse, where they will flower great part of winter.—If the cuttings be put into pots filled with light earth, during any of the summer months, and plunged into a moderate hot-bed, they will take root freely, but these do not make so good plants as those raised from seed.

[A stove is most congenial to this plant in winter. A pure atmosphere is essential to its existence. In hot weather it must be well supplied with water, and in winter it must be carefully guarded against frost, so fatal to most of the natives of Peru^d.]

2, 3, 9. Sow the seeds on a hot-bed in the spring, and when the plants are fit to remove, transplant them on another hot-bed, to bring them forward, treating them in the same way as the Balsamine, and other tender annual plants: in June take them up with balls of earth, and plant them in the borders of the flower garden, where they will flower, and in warm seasons produce ripe seeds.

5, 7. These are annual sorts, which succeed better from seeds which scatter in the autumn, or are sown at that season, than in the spring; for when they are sown in the spring, they seldom come up the same season; but if the seeds be suffered to shed, these plants will maintain themselves, without any other culture, but keeping them clean from weeds, and thinning them where they are too close.

8, 17, 18. These are propagated by seeds, but the difficulty of getting them fresh from America, and the uncertainty of their growing unless they are sown abroad, and brought over in earth, has rendered them rare in Europe. Being plants of little beauty, requiring a stove, with a peculiar soil and management, they have been cultivated merely for variety in botanic gardens.

11. This is propagated by seeds, which must be procured from the places where it naturally grows, for it never produces any in Europe; these seeds should be sown in a tub of earth in the country, for when the dried seeds come over they seldom grow; and if they do, it is not before the second year: and from several parcels of the seeds which I have received from the West Indies, I have not raised more than two plants, and these came up from the seeds which had been sown more than a year; so that if the seeds are sown as soon as they are ripe in a tub of earth, when they arrive in England, the tub should be plunged into a hot-bed of tanners bark, which will bring up the plants; and when these are fit to remove, they should be each planted in a separate small pot filled with earth, composed of sand and light undunged earth, with a little lime rubbish well mixed together, then plunged into a hot-bed of tanners bark, and shaded until they have taken new root; after which, they must be treated as other tender exotic plants, always keeping them in the tan-bed in the stove, giving them but little water especially during the winter season.

15, 16. These are too tender to live through the winter in the open air in this country, so must be kept in a green-house during that season; but only requiring to be screened from frost, they may be placed with Myrtles and the other hardy green-house plants, where they may have a large share of air in mild weather, and be treated in the same way; they are easily propagated by cuttings during any of the summer months, which, if planted in a shady border and duly supplied with water, will take root in five or six weeks; then they may be potted, and placed in a shady situation till they have taken new root, after which they may be treated as the old plants.

[The other sorts have not yet been introduced into our gardens.

^d Curtis.

HELIOTROPIMUM. See *Lithospermum*, *Mentha*, *Tournefortia*.

_____ canariense. See *Bystropogon*.

_____ tricocon. See *Croton*.

HELIX. See *Hedera* and *Salix*.

HELLEBORASTER,

HELLEBORASTRUM,] } See *Helleborus*.

HELLEBORE,

[HELLEBORE, WHITE. See *Veratrum*.]

HELLEBORINE. See [*Arctifusa*, *Cypripedium*, *Epidendrum*,] *Limodorum*, *Satyrium*, and *Serapias*.

HELLEBORUS. (ΕΛΛΕΒΟΡΟΣ of *Dioscorides*: παρὰ τὸ εἶναι τῇ βορᾷ, because it destroys those who eat it. Ray.—From εἶλω, constringo, and βορᾶ, pabulum, a constringing, suffocating, or poisonous food. Morison and Linneus.—From the river Eleborus. Berg.)

Engl. Hellebore. Fr. Ellebore. Ital. Elleboro.

Span. Eleboro. Port. Heleboro. Germ. Nieswurcz.

Dutch Nieskruid. Dan. Nyseurt. Swed. Prustrot.

Lin. gen. n. 702. Reich. 760. Schreb. 956. Tournef.

144. Juss. 233. Gært. t. 65.

Class. 13. 7. Polyandria Polygynia.

Nat. order of *Multifloræ*.—*Ranunculaceæ*, Juss.

GENERIC CHARACTER.

CAL. none—unless the corolla, which in some species is permanent, be considered as such.

COR. Petals five, roundish, blunt, large.

Nectaries several, very short, placed in a ring, one-leaved, tubular, narrower at bottom: mouth two-lipped, upright, emarginate, the inner lip shortest.

STAM. Filaments numerous, subulate. Anthers compressed, narrower at bottom, upright.

PIST. Germs about six, compressed. Styles subulate. Stigmas thickish. (Pist. five or more, permanent, G.)

PER. Capsules (leguminous, beaked, G.) compressed, two-keeled: the lower keel shorter; the upper convex, gaping.

SEEDS several, round, fixed to the future.

OBS. *H. hyemalis* drops its petals; the other sorts retain them, and they become green. The number of pistils varies much.

ESSENTIAL CHARACTER.

Cal. none. Pet. five, or more (or Calyx five-leaved, Cor. none.) Nect. two-lipped, tubular. Caps. many-seeded.

SPECIES.

1. *Helleborus hyemalis*. Winter Hellebore or Aconite. Lin. spec. 783. Reich. 2. 671. hort. cliff. 227. ups. 158. mant. 408. Hall. helv. n. 1191. Jacqu. austr. 3. t. 202. Krock. filef. n. 892. Curtis magaz. t. 3. Blackw. t. 576. Mor. hist. 3. 459. n. 4. f. 12. t. 2. f. 4. Berg. phyt. t. 91.

Aconitum unifolium luteum bulbosum. Baub. pin. 183.

A. hyemale. Camer. epit. 728. Ger. 819. emac. 968.

Park. theat. 314. f. 4. parad. 214. t. 219. f. 1. Raii hist. 700.

A. luteum minus. Dod. pempt. 352.

Flowers solitary sitting in the upper leaf.

- [2. *Helleborus ranunculinus*. Ranunculus-leaved Helleb. Smith ic. ined. 2. 37.

H. niger orientalis ranunculi folio, flore nequaquam globofo. Tournef. cor. 20.

Flowers solitary peduncled, leaves digitate-multifid gashed.]

3. *Helleborus niger*. Black Hellebore, or Christmas Rose.

Lin. spec. 783. Reich. 2. 671. mant. 408. hort.

cliff. 227. ups. 157. mat. med. 142. Woodv. med.

bot. 50. t. 18. Scop. carn. n. 696. Jacqu. austr. 3.

t. 201. Allion. pedem. n. 1512. Krock. filef. n. 893.

Villars dauph. 3. 716. Blackw. t. 506, 507.

Curtis magaz. t. 8. Berg. phyt. 2. t. 21. Lob. adv. 304.

H. niger fl. roseo. Baub. pin. 186. Mor. hist. t. 4.

f. 1.—legitimus. Clus. hist. 1. 275.—verus. Ger.

825. f. 1. emac. 976. 1. Park. parad. 344. t. 343.

f. 6. theat. 212. f. 1. Raii hist. 697.—fl. albo, &

rubente. Baub. hist. 3. 635.

Stem almost naked with one or two flowers, leaves pedate.

4. *Helleborus viridis*. Green Hellebore.

Lin. spec. 784. Reich. 2. 672. mant. 408. hort.

cliff. 227. ups. 158. Gært. fruct. 1. 310. Hudf.

angl. 245. With. 581. Lightf. scot. 297. Relb.

cant. n. 414. Engl. bot. 200. Hall. helv. n. 1192.

Scop. carn. n. 697. Jacqu. austr. 2. t. 106. Krock.

filef. n. 894. Villars dauph. 3. 717. Blackw.

t. 509, 510.

H. niger hortensis, fl. viridi. Baub. pin. 185. Raii

hist. 697. syn. 271.—sylvestris, latiore fol., fl. vir.

Mor. hist. t. 4. f. 5.

Helleborastrum. Lob. ic. 1. t. 680. f. 2. Ger. 825. f. 2.

emac. 976. 2.

Helleborastrum minor, fl. viridante. Park. theat. 212. f. 2.

Elleborus niger adulterinus domesticus. Trag. 405.—

hortensis. Fuchf. 274.—vulgaris, flore viridi vel her-

baceo, radice diuturna. Baub. hist. 3. 636.—alter.

Matth. 1221.

Pseudohelleborus niger. Dod. 385. 2.

Elleborum nigrum alterum. Camer. epit. 941.

Veratrum nigrum. Clus. hist. 1. 275. 1.

Stem bifid, branches leafy two-flowered, leaves digitate.

5. *Helleborus foetidus*. Stinking Helleb., or Bear's-foot.

Lin. spec. 784. syst. 519. Reich. 2. 672. hort. cliff.

227. Hudf. angl. 245. With. 582. Relb. cant.

n. 415. Hall. helv. n. 1193. Pollich pal. n. 540.

Villars dauph. 3. 717. Woodv. med. bot. 53. t. 19.

Blackw. t. 57. Berg. phyt. 187.

H. niger foetidus. Baub. pin. 185. Mor. t. 4. f. 6.

Elleborus niger sylvestris adulterinus. Trag. 251.

Fuchf. 273. Baub. hist. 3. 880.

Helleborastrum maximum. Lob. ic. 1. 679. 2. & 680. 1.

Ger. 826. emac. 976. 3, 4. Park. theat. 213. n. 4.

t. 212. f. 3. Raii hist. 698. 3. syn. 271.

Lycostonum primum. Dod. 386.

β. *H. latifolius*. Mill. dict. n. 6.

Stem many-flowered leafy, leaves pedate.

6. *Helleborus lividus*. Livid, purple, or great three-

flowered Black Hellebore.

Ait. hort. kew. 2. 272. Curtis magaz. 72.

H. trifolius. Mill. dict. n. 4.

H. foetidus β. Lin. spec. 784.

H. niger trifolius. Aldini hort. farnes. 93. f. 92.

Mor. 460. t. 4. f. 7.

Stem many-flowered leafy, leaves ternate.

- [7. *Helleborus trifolius*. Small three-leaved Hellebore.

Lin. spec. 784. Reich. 2. 673. amæn. 2. 356. t. 4.

f. 18. Kalm. itin. 3. 379. ed. engl. 3. 160. Fl.

dan. t. 566.

Scape one-flowered, leaves ternate.

DESCRIPTIONS, &c.

The Hellebores are all hardy herbaceous perennials, with compound leaves, digitate, pedate, palmate or ternate. The flowers have only a single cover, which is called a corolla by Linneus, by others a calyx; they grow either several together at the ends of the stalk and its subdivisions with a single bracte to each pedicel; or single on a scape, naked or with a leaf for an involucre. They appear very early in the spring, and some of them even in winter.

1. Root tuberous, transverse, with many dependent fibres, putting up several naked stems or scapes, simple, smooth, round, from an inch or two to four inches in height, terminated by a single leaf, spreading out horizontally in a circle, divided into five parts almost to the base, and the parts simple or divided into two, three or four lobes. In the bosom of this sits one large, upright, yellow flower; the petals ovate, marked with lines, converging a little, deciduous, usually six in number (six to eight); pistils six (four to six), and stamens about thirty^a.

Native of Lombardy and other parts of Italy; Austria, Silesia, Switzerland; in mountainous situations. It flowers with us from January to March; and was cultivated by Gerard in 1596. In his herbal published the year following, he informs us, that we had then great quantities of it in our London gardens; and therefore it is probable that it was known among us much earlier than 1596. He calls it Winter-Wolf's-bane, or small yellow Wolf's-bane. According to Parkinson, most herbarists called it Winter Wolf's-bane; but some Yellow Aconite. The name of *Winter Aconite* has now generally obtained.

2. Stem a hand in height, upright, round, smooth, leafy at top, sustaining one or two flowers. Root-

^a Linn. mant. Haller, Krock.

leaves on long petioles; stem-leaves subfleshy, embracing; ferrate, smooth, paler underneath, variously gashed. Flowers axillary, solitary, peduncled, upright, yellow: petals roundish, spreading, marked with lines: nectaries numerous, curved, half the length only of the petals: filaments very short; anthers linear, yellow. It is very nearly related to the foregoing species, but handsomer: it differs also in having the leaves more compound and gashed; the flower peduncled; the petals broader and more spreading. Tournefort first brought us acquainted with it from Cappadocia^b.

3. Roots transverse, externally rough and knotted, with many dependent fibres, and some large roots striking down. Scapes from six inches to near a foot in length, round, upright, variegated with red, rising from a sheath, and terminated usually with one flower, sometimes two, and very rarely three. Corolla very large, generally white at first, but frequently with a tint of red growing deeper with age, but finally becoming green: nectaries (eight or ten to twelve or thirteen) greenish yellow, the upper lip longest and slightly emarginate, the lower finely notched. Stamens more than seventy. Germs from four to eight. Each flower has a bracted leaf or two, supplying the place of the calyx. Leaves only from the root, deep and dark green, on long petioles; leaflets (five to eight or nine) ovate-lanceolate, smooth, fleshy, the upper half ferrate^c.

Native of Italy, Germany, Austria, Idria, Silesia, in mountainous situations; flowering from december to march. Cultivated in 1596, by Gerarde^d.—It has the name of Black Hellebore from the colour of the root; and of Christmas Rose, from the time of flowering and the colour of the corolla.

4. Stem round, a little branched at top, but not near so much as in the next sort; leafy, reddish at the base, upright, smooth, a foot or eighteen inches in height. Leaves not of a stiff, leathery consistence, as in the next species, but soft and of a lighter green; those from the bottom are on long petioles, but those on the stem sit close to their sheaths; the leaflets (seven to ten) are lanceolate, acuminate, sharply ferrate, smooth, gashed, usually trifid, the divisions sometimes deeply lobed; and at the base of each peduncle is a similar leaf, only smaller. Peduncles axillary, an inch long, round; supporting two (sometimes only one) nodding, green flowers. Nectaries eight or ten, the length of the styles, a little ferrate and bent in on the rims, the upper lip truncate, and slightly two-toothed: stamens fifty or more, with pale yellow anthers, not having a sharp point: pistils three, seldom four, very seldom five. The anthers before they are ripe are in fifteen rows, all together forming a ball. The capsules terminate in a long linear-acuminate beak, each containing about sixteen cylindric ovate seeds, wrinkled a little, and of a dark lead colour^e.

Native of France, Italy, Austria, Carniola, Silesia, Switzerland, Great Britain. As in several places near Cambridge; Yorkshire, near Leeds; in Suffex, near Arundel Castle; Kent; Oxfordshire; Northamptonshire; Worcestershire; Hampshire.—Parkinson mentions his having seen it in some of the Northamptonshire woods. Ray in his history gives no hint of this or the next species being natives of England; and seems in his Synopsis, to think that they are not aboriginals here. Bobart speaks of this as growing wild abundantly in Stokenchurch woods, and many other rocky and hilly situations, but makes no mention of the fifth sort being found wild in England.—In Dunblaw-Glen, Scotland: in woods, and pastures among bushes. It flowers in march and april.

5. Root small, but bent with a prodigious number of slender dark-coloured fibres. The stem is from eighteen inches to near a yard in height, towards the bottom round, strong, naked, marked with alternate scars, the vestiges of former leaves; dividing and subdividing at top into many branches, producing great abundance of flowers.] Leaves composed of eight or nine long narrow lobes, which join at their base, commonly four on each side united at bottom,

and one in the middle on the centre of the foot-stalk, they are ferrate and end in acute points; those on the lower part of the stalk are much larger than those on the upper, which are small and narrow. [They are of a very deep green; but the branches, stipules, peduncles and flowers are of a pale yellowish green. At the divisions of the branches are oval-lanceolate stem-clasping stipules deeply bifid at the extremity: at the base of each peduncle an oval-lanceolate entire bracte: both these are frequently tinged with purple. Flowers almost globular, pendent, on peduncles, forming a sort of umbel: petals roundish, blunt, green with purple edges: stamens the length of the petals, with white anthers: germs three, hairy: nectaries from five to eight^f.

Native of Italy, Germany, Switzerland, France, England. As between Northfleet and Gravesend in Kent; near Cambridge; near Bungay and Brundish in Suffolk; Combury stone-quarry in Oxfordshire: abundantly in Suffex; in Hampshire, and Somersetshire.

Gerarde says, that it was wild in his time in many woods and shadowy places in England. He calls it Bear-foot, Setter-wort, Setter-grass, and Oxe-heele. The three last names are from its use in rowelling kine, or making a feton of the root, and putting it through the dew-lap; this operation was called by the old farriers *setting*, a corruption perhaps from *se-toning*.

It flowers in november and december to march and april. Bees frequent the flowers much, early in the spring, though it is a plant so remarkably fetid.

This sort is always green, whereas the foregoing dies down to the root every year.

Most, if not all the Hellebores, produce very powerful effects when used medicinally. The species most in use is the *Helleborus niger*, which is supposed to have been the plant so celebrated amongst the ancients in the cure of madness: the taste of the root when fresh, is bitterish, and according to Dr. Grew, "being chewed, and for some time retained upon the tongue, after a few minutes it seemeth to be benumbed, and affected with a kind of paralytic stupor, or as when it hath been burnt with eating or supping any thing too hot." It also emits a nauseous acrid smell, but being long kept, both its sensible qualities and medicinal activity suffer very considerable diminution. Bergius has very properly attended to this circumstance, for in defining its virtues he considers it under three different degrees of dryness. "*Virtus recentis venenata, rubefaciens, vesicans; recenter siccata emetica, purgans; emmenagoga, antiphthirica, sternutatoria; diu conservata vix purgans, alterans, diuretica.*" Although many writers consider this root as a perfectly innocent and safe medicine, yet we find several examples of its poisonous effects; it should therefore be used with proper caution. It seems to have been principally from its purgative quality that the ancients esteemed this root such a powerful remedy in maniacal disorders, with a view to evacuate the *atra bilis*, from which these mental diseases were supposed to proceed: but though evacuations be often found necessary in various cases of alienation of mind, yet as they can be produced with more certainty and safety by other medicines, this catholicon of antiquity seems now almost entirely abandoned: it is however still used in small doses for attenuating viscid humors, promoting the uterine and urinary discharges, and opening inveterate obstructions of the remoter glands: it often proves a powerful emmenagogue in plethoric habits, where steel is considered as improper: it is also used in dropsies; and in some cutaneous diseases.

A species of similar though less powerful virtue is the *Helleborus foetidus*, or common black Hellebore, a native of England: this plant is very frequently used in popular physic as an anthelmintic; the powder of the dried leaves being the preparation principally made use of; and this in doses of about fifteen grains for children. The decoction of about a dram of the green leaves being considered as equal to fifteen grains of the dry ones: it is usually repeated on two, and some-

^b Smith. ^c Krock, Scopoli, Curtis. ^d Hort. kew.

^e Krock, Scopoli, Haller, Lightf. Woodw. Mfs. Gartner.

^f Woodville and Woodw. Mfs.

times three successive mornings, and seldom fails to bring away worms, if there be any in the intestinal tube.

β. The lobes of the leaves in this variety are broader, and the stalks grow taller. It grows naturally in Istria and Dalmatia, and is not so hardy as ours, inasmuch that a severe winter destroys it.]

6. This resembles *H. viridis*, but differs from it in having trifoliate leaves, which are broader and entire, their surface also is smoother, and the stalks rise higher than either of our common sorts.

[The native place of this species is unknown. It flowers from January to May. Mr. Miller cultivated it in 1731^g.

7. Stem leafless. Flower minute, resembling that of the *Parnassia*, and white, (yellow)^h.

Native of Denmark, Canada, Siberia and Hudson's-bay, whence it was introduced by the Hudson's-bay Company in 1782ⁱ. In Canada it is so abundant in the woods as to cover the ground in many parts: it commonly chooses mossy places, that are not very wet; Wood-sorrel and Alpine *Circæa* are its companions. It is called *Tiffavoyanne jaune* by the French, all over Canada. The leaves and stalks are used by the Indians, for giving a fine yellow colour to several kinds of work, which they make of skins. The French dye wool, &c. yellow with this plant^k. It flowers here in June and July.]

PROPAGATION AND CULTURE.

1. This flowers very early in the spring, which renders it worthy of a place in all curious gardens, especially as it requires but little room; it is propagated by offsets, which the roots send out in plenty; these roots may be taken up and transplanted, any time after their leaves decay, which is generally by the beginning of June, till October; when they will begin to put out new fibres; but as the roots are small, and nearly of the colour of the ground, so, if care is not taken to search them, many of the roots will be left in the ground; these roots should be planted in small clusters, otherwise they will not make a good appearance; for single flowers, scattered about the borders, of these small kinds, are scarce seen at a distance; but when these and the *Snowdrops* are alternately planted in bunches, they will have a good effect, as they flower at the same time, and are much of a size.

[From the earliness of its flowering, the Winter Aconite is liable to be cut off by severe frosts.]

3. This is propagated by parting the roots in autumn, for the seeds seldom ripen in England: in order to have it flower well, it should have a more sheltered situation than the common sorts.

[Like most alpine plants, it loves a pure air, a situation moderately moist, and a soil unmanured. The flowers being injured by frost, in order to have them in beauty, the plants should be covered during winter with hand-glasses; or preserved in pots in a common hot-bed frame.—Neither this nor the first sort thrive very near London^l.]

4, 5. If the seeds of these be permitted to scatter, or sown soon after they are ripe, the plants will come up early in the following spring, and when they have obtained sufficient strength, may be transplanted into woods or wilderness quarters, where they will thrive and flower very well in the shade, and make a good appearance at a season when very few other plants are in flower.

6. [It has been usual to treat this species as a greenhouse plant, or at least to shelter it under a frame in the winter: probably it is more hardy than we imagine. It is propagated by parting its roots in autumn, and by seeds: but few of the latter ripen in general, nor do the roots make much increase. To these causes we must doubtless attribute its present comparative scarcity. On account of its early flowering (in February), as well as its singularity, it is a desirable plant in collections^m.

HELLEBORUS. See *Adonis*, *Astrantia*, *Isopyrum*.]

ALBUS. See *Veratrum*.

^g Hort. kew.

^h Linn. amoen.

ⁱ Hort. kew.

^k Kalm.

^l Curtis.

^m Ibid.

HELLEBORUS flore globofo. See *Trollius*.

HELMET-FLOWER. See *Aconitum*.

HELMINTHOTHECA, and } See *Picris*.

HELMINTIA.

HELONIAS.

Lin. gen. n. 458. *Reich.* 493. *Schreb.* 622. *Juss.* 47.

Class. 6. 3. Hexandria Trigynia.

Nat. order of Coronariæ.—*Junci*, *Juss.*

GENERIC CHARACTER.

CAL. none.

COR. Petals six, oblong, equal, deciduous.

STAM. Filaments six, subulate, a little longer than the corolla. Anthers incumbent.

PIST. Germ roundish, three-cornered. Styles three, short, reflex. Stigmas blunt.

PER. Capsule roundish, three-celled.

SEEDS roundish.

ESSENTIAL CHARACTER.

Cal. none. Cor. six-petalled. Caps. three-celled.

SPECIES.

1. *Helonias bullata*. Spear-leaved *Helonias*.

Lin. spec. 485. *Reich.* 2. 130. *amæn.* 3. 12. *t.* 1. *f.* 1.

Pluk. alm. t. 174. *f.* 5. *Mor. hist.* 3. 606. *f.* 15.

t. 2. *f.* 1. (*Ephemerum*).]

Veratrum americanum. *Mill. dict. n.* 4. *fig.* 181.

t. 272.

Leaves lanceolate nerved.

2. *Helonias asphodeloides*. Grass-leaved *Helonias*.

Lin. spec. 485. *Reich.* 2. 130. *Pluk. mant. t.* 342.

f. 3. (*Asphodelus*).]

Stem-leaves setaceous.]

DESCRIPTIONS, &c.

1. Root perennial, composed of many thick fleshy fibres. Leaves spreading near the ground, and sitting close to the root at their base, of a light green colour, having six longitudinal nerves, which appear strongest on the under side; they are four or five inches long, two or three broad in the middle, narrowing gradually to both ends, and continuing green all the year. In the centre of these springs up a single erect stalk, a foot in height, having a few vestiges of small leaves, ending in sharp points, standing alternately close to the stalk: this is terminated by a close obtuse spike of dark-red flowers, with petals spreading open flat; the filaments are twice the length of these; and the anthers are four-cornered, of a blue purple colour. Some of the flowers have no stigma, and are barren. It flowers the latter end of June (April and May, *H. K.*); and in warm seasons the seeds will ripen here.

I was first favoured with this species by Mr. Peter Collinson; and afterwards received a plant, with a drawing of it made in the country where it naturally grows, from Mr. John Bartram, junior: I have since been furnished with more plants by Dr. Bensel of German Town in Philadelphia, who found it growing plentifully in shady moist places.

[This plant is called *Star-grass* by the natives; and is of an acrid aromatic flavourⁿ.

2. Stem extremely simple, two feet high. Leaves alternate or scattered, upright, even but rugged at the edge. Flowers white, in a simple, terminating raceme, on peduncles longer than the flowers. It resembles an *Asphodel* very much, but has three recurved styles.—Native of Pennsylvania^o, and Virginia. Introduced in 1765, by Mr. William Young. It flowers in May and June^p.]

PROPAGATION AND CULTURE.

These plants may be increased by offsets taken from the roots in autumn; or by seeds which should be sown as soon as ripe. They prefer a light fresh soil, and are hardy enough to thrive in the open air. They must not be removed oftener than once in three or four years; and they are as long in coming to flower from the seed.

[HELVELLA.

Lin. gen. Reich. n. 1330. *Schreb.* 1679. *Elvela*.

Lin. gen. n. 1214. *Fungoidatter. Micheli* 82. *Fun-*

goides. Mich. 86. *Fungoidis spec. Vaill. B. P.*

xi. 8.

ⁿ Mor. hist.

^o Linn. spec.

^p Hort. kew.

GENERIC CHARACTER.

A turbinated Fungus, with both upper and under surface smooth.

SPECIES.

1. *Helvella Mitra*.—Stipitated. Figured by *Micheli*, *gen. t. 86. f. 7, 8, 9. Schæff. fung. 159—162, 154, 282, 320 & 322. Battar. fung. 25. t. 3. f. B. & 24. t. 2. f. G.*
2. *H. pineti*.—Without any stalk. *Lin. succ. n. 1243. fl. lapp. n. 517. (Agaricus).*
They are both natives of England, in woods. Mr. Hudson adds a third.
3. *H. plana*. *Huds. angl. 633. 2.*
And Swartz adds three more.
4. *H. versicolor*.
5. *H. tremellina*.
6. *H. atrata*. *Prodr. 149.*
All stemless: and natives of Jamaica.
Loureiro has, besides the two first, a new one, under the name of
7. *H. amara*.

Stipitated, parasitical, esculent and wholesome.

HELXINE. See *Convolvulus*, *Parietaria*, and *Polygonum*.]

HEMEROCALLIS. (From *ἡμέρος*, a day; and *κάλλος*, beauty. A plant whose flower is the beauty of a day.)

Engl. Day-Lily. Fr. *Lis-Aspodele*.

Lin. gen. n. 433. Reich. 467. Schreb. 585. Juss. 54.

Gært. t. 83, 179. Lilio-Asphodelus. Tournef.

179. (With the flower of a Lily, and the root of Asphodel.)

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Lilia* or *Liliaceæ*.—*Coronariæ*, Lin.—

Narcissi, Juss.

GENERIC CHARACTER.

CAL. none.

COR. six-parted, bell-funnel-form: tube short: border equal spreading, more reflex at top.

STAM. Filaments six, subulate, the length of the corolla, declining; upper ones shorter. Anthers oblong, incumbent, rising.

PIST. Germ roundish, furrowed, superior. Style filiform, the length and situation of the stamens. Stigma obtusely-three-cornered, rising.

PER. Capsule ovate-three-lobed, three-cornered, three-celled, three-valved.

SEEDS very many, roundish.

ESSENTIAL CHARACTER.

Cor. bell-shaped: the tube cylindric. Stam. declining.

SPECIES.

1. *Hemerocallis flava*. Yellow Day-Lily.
Lin. spec. 462. syst. 339. Reich. 2. 91. hort. upf. 88. cliff. 128. Gmel. sib. 1. 37. Krock. files. n. 539. Jacqu. hort. 2. 65. t. 139. Curtis magaz. 19.
H. lutea. Gært. fruct. 2. 15.
H. Lilio-Asphodelus. Scop. carn. n. 425.
Lilio-Asphodelus luteo flore. Clus. hist. 1. 137. Park. parad. 148. 2. t. 149. f. 4. Bauh. hist. 2. 700. Raii hist. 1191. 1.
Lilium luteum, asphodeli radice. Bauh. pin. 80. Mor. hist. 2. 412. f. 4. t. 21. f. 1.
L. non bulbosum. Ger. 90. f. 1. emac. 98. 1.
Asphodelus liliaceus, luteo odorato flore. Bess. exst. vern. 9. t. 5. f. 3.
β. H. minor. Mill. dict. n. 2.
Lilio-asphodelus luteus minor. Tournef. inst. 344. Mor. 412. 2.
Leaves linear-subulate keeled; corollas yellow.
2. *Hemerocallis fulva*. Copper-coloured Day Lily.
Lin. spec. 462. syst. 339. Reich. 2. 91. Thunb. jap. 142. Loureiro cockinch. 205. Curtis magaz. 64.
Lilio-Asphodelus puniceus. Clus. hist. 1. 137. Park. parad. 148. t. 149. f. 5. Bauh. hist. 2. 701. f. 1. Raii hist. 1191. 2.
Lilium rubrum asphodeli radice. Bauh. pin. 80. Mor. 412. 3. t. 21. f. 3.
L. non bulbosum phoeniceum. Ger. 90. f. 2. emac. 98. f. 2.
Leaves linear-subulate keeled, corollas tawny or copper-coloured.
- [3. *Hemerocallis lancifolia*.
Thunb. in Linn. transf. 2. 335.

H. japonica. Lin. syst. 339. Thunb. jap. 142.

Aletris japonica. Thunb. nov. act. upf.

Leaves lanceolate seven-nerved.

4. *Hemerocallis japonica*.

Thunb. in Linn. transf. 2. 335. Kämpf. ic. select. t. 11.

Leaves ovate waved many-nerved.

5. *Hemerocallis cordata*.

Lin. syst. 339. Thunb. jap. 143. Gært. fruct. 2. 484.

Leaves heart-shaped veined.]

DESCRIPTIONS, &c.

1. The first sort has strong fibrous roots, to which hang knobs, or tubers, like those of the Asphodel, from which come out leaves, two feet long, with a rigid midrib, the two sides drawing inward, so as to form a sort of gutter on the upper side. The flower-stalks rise two feet and a half high, having two or three longitudinal furrows; these are naked, and at the top divide into three or four short peduncles, each sustaining one pretty large yellow flower shaped like a Lily, having but one petal, with a short tube, spreading open at the brim, where it is divided into six parts; these have an agreeable scent, from which some have given them the title of yellow Tuberoses. It flowers in June, and the seeds ripen in August.

[Parkinson observes, that "this agrees with the following sort so nearly, as that it might seem to be the same; but the leaves are not fully so large, nor the flower so great or spread open: the colour is a fair yellow wholly; it is very sweet; and it abideth blown many days before it fade." Hence this species does not correspond entirely with its name of Hemerocallis or Day-Lily.

Native of Siberia, Hungary, Dalmatia, Istria; it has established itself in Switzerland, Silesia, &c.

"These Lilies," (this and the following species) says Gerard, "do grow in my garden, and in the gardens of herbarists and lovers of fine and rare plants." He calls it Liriconfancie or Yellow Lillie. By Parkinson it is named Yellow Day-Lilly.]

β. The variety has smaller roots; the leaves are not near so long, have not more than half the breadth, and are of a dark green colour. The flower-stalk is a foot and half high, naked and compressed, without furrows; at the top are two or three yellow flowers, which are nearer the bell shape than the others, and stand on shorter peduncles. This flowers the beginning of June, and the seeds ripen early in August. It grows naturally in Siberia.

2. This is a much larger plant than the first, and the roots spread and increase much more, therefore it is not proper furniture for small gardens; the roots have very strong fleshy fibres, to which hang large oblong tubers. The leaves are near three feet long, hollowed like those of the former, turning back toward the top. The flower-stalks are as thick as a man's finger, and rise near four feet high; they are naked, without joints, and branching at the top, where are several large copper-coloured flowers, shaped like those of the Red Lily, and as large. The stamens of this sort are longer than those of the other, and their summits are charged with a copper-coloured farina, which sheds on being touched. These flowers never continue longer than one day, but there is a succession of flowers on the same plants for a fortnight or three weeks; it flowers in July and August.

[This, says Linneus, seems to be specifically different from the foregoing, though no real difference is discovered: it is larger in size, the corolla is copper-coloured, and the flowers appear later. To these distinctions we may add, that the flowers of the *fulva* have little or no smell, whereas those of the *lutea* are very fragrant; that the former are much shorter lived; and that they are seldom or never succeeded by seed; whereas the *lutea* generally produces ripe seed. Certainly none of these circumstances can be admitted as genuine specific differences: and yet it is remarked by Mr. Curtis, that when the several characters in which the *fulva* differs so essentially from the *flava*

are attentively considered, we shall wonder that Linneus could entertain an idea of their being varieties of each other. He observes, that the leaves of this species on their first emerging from the ground, and for a considerable time afterwards are of the most delicate green imaginable; that the appearance which the plant assumes at this period of its growth is indeed so pleasing, as to constitute half its beauty; that its blossoms are twice the size of those of the *flava*, of a tawny orange colour, without gloss or smell, the petals waved on the edge, and the flowers rarely or never succeeded by ripe capsules.

In contradiction to this opinion, I cannot but relate a casual experiment communicated to me by my ingenious friend Miss Welch of Ardenham-hill, near Aylesbury. In the year 1788 she removed several plants from Hampstead to a new garden she was then making in Buckinghamshire. The soil was a stiff clay manured with pond mud, sand, and dung in some parts; in others it was a compost formed of the ruins of buildings and limestone, mixed with a mould produced from a variety of animal and vegetable substances. The plants were first placed in the clayey soil. Among them was a single plant of *Hemerocallis fulva*. The succeeding year she divided this plant, and put part of it in a shallow bed of the compost formed from the ruins, &c. It shot very freely, so that she was able to take off another part of the plant, and the same summer set it in the same bed. When the last plant flowered she was agreeably surprised with the sight of an *Hemerocallis flava*, which she is positive she was not possessed of, till it was thus produced by accident. The year after, she had plants varying in size and colour, large and of a deep tawny hue, small and absolutely yellow, and also of a pale tawny, and of a size between *fulva* and *flava*^b. The change of colours in flowers occasioned by removing plants into a soil of a different nature, is a circumstance well known to florists^c.

Its natural place of growth was not known to the old botanists. Linneus makes it to be a native of China. Father Loureiro says it is cultivated there and in Cochinchina, but does not affirm that it is a native. Thunberg inserts it among the Japanese plants in these words—*crefcit hinc inde, fape culta*: it grows here and there, often cultivated. In the catalogue of the Royal Garden at Kew, it is a native of the Levant. Does not this uncertainty favour the idea of its being rather a variety than a distinct species?

In Japan it varies with a double flower, and with variegated leaves^d.

In China and Cochinchina the inhabitants boil the flowers, both fresh and dry, commonly with their meat^e.

3. Leaves next the ground acuminate, spreading at the tip, entire, upright, deep green on the upper surface, a finger's length; some almost a hand, others only an inch broad: petioles channelled, fleshy, awl-shaped, smooth, longer than the leaf. Scape round, jointed, upright, smooth, longer than the leaves. Bractes at the joints of the scape and under the peduncles ovate, concave, smooth. Flowers at the top of the scape in racemes, drooping. Peduncle round, smooth, half an inch in length. Corolla white; tube furrowed, half an inch long. Filaments longer than the corolla, equal, filiform, fastened to the base of the corolla by the side of the germ; which is ovate and smooth; style longer than the stamens; stigma simple, white. Capsule oblong, six-furrowed, smooth.

Native of Japan, and frequently kept in gardens and houses there, for its elegance: flowering in August and September^f.

4. Leaves radical, petioled, acuminate, very finely veined transversely, smooth, a hand in length. Petioles winged, membranaceous, a hand in length or rather more. Flowers as in the foregoing species.—Native of Japan^g.

5. Stem round, upright, smooth, a foot high or

more. Leaves alternate, petioled, ovate-oblong, acute, pale underneath, smooth on both sides, upright, a span long and a hand broad, the younger ones gradually smaller and less cordate: petioles compressed, winged, the length of the leaf. Flowers terminating, alternate, upright. Capsule an inch in length, ovate, angular, smooth, six-valved, six-celled. Seeds numerous in each, imbricate, orbiculate, depressed, smooth, surrounded with a membranaceous wing^h;—obovate-triangular, leafy-compressed, diaphanous; edged with a very thin, broad, transparent membrane, of a shining golden colour, with two opaque lines from the base towards the nucleusⁱ.

Gartner doubts whether this be a genuine species of *Hemerocallis*, since it differs so much in the fruit.

Native of Japan, and frequently cultivated there^k.]

PROPAGATION AND CULTURE.

1, 2. These plants are easily propagated by offsets, which the roots send out in plenty; they may be taken off in autumn, that being the best season for transplanting the roots, and planted in any situation, for they are extremely hardy, and will require no other culture but to keep them clean from weeds, and to allow them room that their roots may spread; the first sort may also be propagated by seeds, which if sown in autumn, the plants will come up the following spring, and these will flower in two years; but if the seeds are not sown till spring, the plants will not come up till the year after.

In a moist soil and a shady situation they thrive better than in dry ground: [From their size, and the great increase of their roots, especially in the second sort, they are most proper for large gardens and plantations.

HEMEROCALLIS. See *Alstroemeria*, *Lilium*, *Pancratium*.

LILIASTRUM. See *Anthericum*.

HEMIMERIS.

Lin. gen. Schreb. n. 1016. suppl. 45. Thunb. nov. gen. 74. Juss. 120.

Class. 14. 2. Didynamia Angiosperma.

Nat. order of *Personatae*.—*Scrophularia*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-parted almost to the base, much shorter than the corolla: parts ovate, unequal, permanent.

COR. monopetalous, wheel-shaped, ringent: tube very short (scarcely any), intruded, white. Upper lip cloven, with a kind of bag at the base composed of little nectareous pits: lower concave, blunt.

STAM. Filaments two or four, filiform, inserted into the base of the lower lip, bent round. Anthers very small, heart-form, cohering, yellow.

PIST. Germ superior, sharp, smooth. Style thread-form, of the same length and in the same situation with the stamens. Stigma simple, sharpish.

PER. Capsule ovate, sharp, twin, gibbous at the base on one side, two-celled, two-valved.

SEEDS very many, smooth.

OBS. Allied to *Antirrhinum*, but differing in the form of the corolla.

ESSENTIAL CHARACTER.

Cal. five-parted. Cor. wheel-form: upper lip cloven, with a nectareous bag at the base.

SPECIES.

1. *Hemimeris fabulosa*.

Lin. syst. 561. suppl. 280.

Diandrous; leaves opposite pinnatifid, stem prostrate.

2. *Hemimeris montana*.

Lin. syst. 561. suppl. 280.

Diandrous; leaves opposite, ovate, serrate; stem upright.

3. *Hemimeris diffusa*.

Lin. syst. 561. suppl. 280.

Didynamous; leaves alternate and opposite pinnatifid; stem patulous.

Native of the Cape. Detected there by Thunberg. Perhaps the second may be only a variety of the first species.

HEMIONITIDI AFFINIS. See *Polypodium*.]

^b Thunberg.

ⁱ Gartner.

^k Thunberg.

^b Linn. trans. 2. 353.

^c See Bradley's Philosoph. account of the Works of Nature. p. 79.

^d Thunberg.

^e Loureiro.

^f Thunberg.

^g Ibid.

HEMIONITIS. (From *Ἡμίονος*, a Mule.—Because it was supposed to be barren.

Engl. Mule-Fern.

[*Lin. gen.* 1176. *Reich.* 1293. *Schreb.* 1628. *Juss.* 15.

Class. 24. 2. Cryptogamia Filices, or Ferns.

GENERIC CHARACTER.

Capsules digested into lines, meeting together, either intersecting each other or branched.

SPECIES.

1. *Hemionitis lanceolata*.

Lin. spec. 1535. *Reich.* 4. 399. *Brown. jam.* 95. 1. *Petiv. fil.* 122. t. 6. f. 4. (Phyllitis). *Plum. fil.* 127. f. 6. (Lingua cervina).

Fronds lanceolate quite entire.

2. *Hemionitis lineata*.

Swartz prodr. 129.

Frond lanceolate-linear, lines of fructifications nearly parallel longitudinal.

3. *Hemionitis parasitica*.

Lin. spec. 1535. *Reich.* 4. 399. *Brown. jam.* 95. 2.

Fronds ovate acuminate, shoots chaffy creeping.

4. *Hemionitis palmata*.

Lin. spec. 1535. *Reich.* 4. 400. *hort. cliff.* 474.

Plum. amer. 23. t. 33. *fil. t.* 151. *Brown. jam.*

95. 3. *Sloan. jam.* 1. 72. 8. *Mor. hist.* 3. 560.

f. 14. t. 1. *f.* 5. *Petiv. fil.* 177. t. 8. *f.* 11.

Pluk. alm. t. 291. *f.* 4. (Filix).

Fronds palmate hirsute.

5. *Hemionitis japonica*.

Lin. syst. 932. *Thunb. jap.* 333.

Fronds bipinnate: pinnae lanceolate entire.

6. *Hemionitis reticulata*.

Forst. fl. austr. n. 423.

Fronds lanceolate-fickled quite entire, veins netted.

7. *Hemionitis esculenta*.

Retz. obs. 6. 38. n. 83.

Frond pinnate, pinnae alternate lanceolate crenate slightly eared at the base.

8. *Hemionitis prolifera*.

Retz. obs. 6. n. 84.

Frond pinnate, decumbent, pinnae lanceolate crenate, axils proliferous.

DESCRIPTIONS, &c.

The five first of these Ferns are natives of the West-Indies, the sixth has been lately discovered in the Society Isles, and the two last were observed by Koenig in the East-Indies.

1. The leaves are plane and simple, seldom exceeding sixteen or eighteen inches in length, when most luxuriant; they grow in tufts from a strong fibrous root. This plant is commonly found on the trunks of trees in the cooler and more shady inland woods of Jamaica^a.

2. Native of Jamaica^b.

3. Leaves about two inches long, and one and a half over where broadest.—Creeping on trees in the cooler inland woods of Jamaica^c.

4. Roots many, fibrous, black. Stalks black, cornered, about six inches high, covered with ferruginous hair. Frond divided into three parts, cut in almost to the centre; the two under sections having ears or appendices making the leaf appear divided into five sections: the middle division largest, an inch and half long, and half as broad in the middle, easily dented on each side, rough, of a yellowish green colour; each ends in a point, and has a purple midrib, from which go several transverse fibres, on which is the seed. The whole frond is like the leaf of the creeping Ranunculus. Between Savanna and Two-mile wood in Jamaica^d.—Found also in Martinico, by Plumier.

5. The whole frond is smooth with a furrowed stipe, at bottom bipinnate, at top pinnate. Pinnae and pinules lanceolate, acute, entire, pale underneath. The fructifications are in trichotomous lines over the whole lower surface. Native of Japon^e.

6. Native of the Society Isles^f.

7. A foot and half high or more. Stipe smooth, grooved. Pinnae almost sessile, deeply notched, each

^a Browne.

^b Swartz.

^c Browne.

^d Sloane.

^e Thunberg.

^f Forster.

notch at the base next the stipe more deeply cut and elongated: the terminating pinna as it were sagittate. Roots esculent.

8. Primary frond pinnate, decumbent, large, pinnae sessile, alternate, truncate at the base, almost half a foot in length: from the axils of these other fronds grow frequently in pairs, a foot and half long, with similar pinnae, only much smaller, and the stipe thickened like a tubercle^g.]

PROPAGATION AND CULTURE.

These are plants seldom propagated in gardens. They must be procured from the countries where they naturally grow; planted in pots filled with loamy undunged earth, and placed in the stove: in summer they must be frequently watered, but in winter they require little. In summer they should have plenty of free air.

[HEMIONITIS. See *Adiantum*, *Asplenium*, *Polypodium*, *Pteris*.

HEMLOCK. Common. See *Conium*.

Water. See *Cicuta*.

HEMP. See *Cannabis*.

Agrimony. See *Eupatorium*.

Bastard. See *Ageratum*.

Water. See *Bidens*.

Bastard. See *Datisca*.

Virginia. See *Acnida*.

HENBANE. See *Hyoscyamus*.

HENBIT. See *Lamium*.

HENNA. See *Larsonia*.

HEPATICAE. See *Anemone*, *Asperula*, *Fungermannia*, *Marchantia*, *Riccia*.

HEPATICOIDES. See *Fungermannia*.

HEPATORIUM. See *Bidens* & *Coreopsis*.

HEPETIS. See *Pitcairnia*.]

HEPTAPHYLLUM. See *Alchemilla*, *Potentilla*.

HERACLEUM. (From *Ἡρακλῆς*, Hercules. *Ἡράκλειος* is the name of a plant in Dioscorides.—From *Heracles* the father of Hippocrates. Boehmer.)

Lin. gen. n. 345. *Reich.* 375. *Schreb.* 477. *Juss.* 222.

Sphondylium. *Tournef. t.* 170. *Gærtn. t.* 21.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Umbellatæ* or *Umbelliferae*.

GENERIC CHARACTER.

CAL. *Umbel universal* manifold, very large: *partial flat*. *Involucre universal* many-leaved, caducous; *partial* halved on the outside: *leaflets* three to seven, linear-lanceolate, the exterior ones longer. *Perianth* obscure.

COR. *Universal* not uniform, radiate: *flores* all generally fertile. *Proper*—of the *disk* equal, five-petalled; petals bent in and hooked, emarginate—of the *ray* unequal, five-petalled; the outer ones larger, and more bifid, oblong, hooked.

STAM. *Filaments* five, longer than the corollas. *Anthers* small.

PIST. *Germ* subovate, inferior. *Styles* two, approximating, short. *Stigmas* simple.

PER. none. *Fruit* elliptic, compressed, emarginate, striated in the middle on both sides, margined.

SEEDS two, ovate, leafy and compressed.

OBS. In some species the radiate female flowers are fertile; the male ones of the disk are abortive, being destitute of stigmas. *Sphondylium* *Tournef.* 1, 2. is hermaphrodite throughout, and sometimes the involucre is entirely wanting.

H. angustifolium has uniform flowers.

ESSENTIAL CHARACTER.

Invol. caducous. *Cor.* difform, inflex-emarginate. *Fruit* elliptic, emarginate, compressed, striated, margined.

SPECIES.

1. *Heracleum Sphondylium*. Common Cow-Parsnep.

Lin. spec. 358. *Reich.* 1. 686. *hort. cliff.* 103.

fl. suec. n. 243. *Huds. anglt.* 117. *With.* 287.

Lightf. scot. 158. *Gmel. sib.* 1. 213. *Neck.*

gellob. 145. *Pollich. pal. n.* 284. *Leers her-*

born. n. 192. *Krock. files. n.* 421. *Blackw. t.*

540. *Plenck, ic. t.* 175. *Villars dauph.* 2. 637.

^g Retzius.

- H. Branca urfina. *Allion. pedem. n. 1291. Crantz. umb. 57.*
 Sphondylium. *Mattb. 791. Dod. 307. Lob. ic. 1. 701. 2. Ger. emac. 1009. Rivin. pent. t. 4. Hall. helv. n. 809. Raii hist. 408. syn. 205.—vulgare. Park. theat. 953. Pet. brit. t. 24. f. 1.—hirsutum. Baub. pin. 157. Mor. hist. 3. f. 9. t. 16. f. 1. Dcd. pempt. 307.*
 S. f. Branca urfina germanica. *Baub. hist. 3. 160.*
 S. Branca. *Scop. carn. n. 335.*
 Branca urfina. *Brunfels. Trag. 437.*
 Acanthus vulgaris f. germanica. *Fuchs. 53.*
Leaflets pinnatifid, even; flowers radiate.
 [2. Heracleum angustifolium. *Narrow-leaved Cow-Parsnep.*
Lin. syst. 282. Reich. 1. 687. mant. 57.
 a. H. angustifolium. *Jacqu. austr. 2. 46. t. 173. Krock. files. n. 425. Hudf. angl. 117. 1. 3. With. 288.*
Sphondylium hirsutum fol. angustioribus. Baub. pin. 157. prodr. 83. Riv. pent. 5.
 S. majus aliud laciniatis fol. *Park. theat. 954. 3. Raii hist. 408. syn. 205. Pluk. alm. t. 63. f. 3. Pet. brit. t. 24. f. 2. Jagged Cow-Parsnep: or narrow-leaved Cow Parsnep.*
 β. H. longifolium. *Lin. syst. 282. Jacqu. austr. 2. 46. t. 174. Krock. files. n. 426. Long-leaved Cow-Parsnep.*
 γ. H. elegans. *Krock. files. n. 427. Jacqu. austr. 2. t. 175. Allion. pedem. n. 1292.*
Leaves crosswise-pinnate, leaflets linear; corollas flosculose.]
 3. Heracleum fibricum. *Siberian Cow-Parsnep.*
Lin. spec. 358. syst. 282. Reich. 1. 687. hort. upf. 65. mant. 354. Gmel. sib. 1. 218. (Pastinaca).
Leaves pinnate, leaflets in fives, the middle ones sessile; corollas uniform.
 4. Heracleum Panaces. *Palmated Cow-Parsnep.*
Lin. spec. 358. syst. 282. Reich. 1. 687. hort. upf. 65. cliff. 103. Gmel. sib. 1. 213. Krock. files. n. 422.
Sphondylium majus f. Panax Heracleum. Baub. hist. 3. 161. Raii hist. 409.
 S. Panaces. *Gartn. fruct. 1. 86.*
 Panax Sphondylii folio f. Heracleum. *Baub. pin. 157.*
 P. Heracleum. *Dod. pempt. 305. Ger. 850. emac. 1003.—verum, ficulneo folio. Park. theat. 949. f. 1.*
Leaves pinnate, leaflets in fives, the middle ones sessile, flowers radiate.
 5. Heracleum austriacum. *Austrian Cow-Parsnep.*
Lin. spec. 359. syst. 282. Reich. 1. 688. Jacqu. austr. 1. 38. t. 61. Crantz austr. 153. t. 1. f. 1. Krock. files. n. 423.
Sphondylium austriacum. Scop. carn. n. 336.
 S. alpinum parvum. *Baub. pin. 157. prodr. 83. Raii hist. 409.*
Leaves pinnate, wrinkled and scabrous on both sides, flowers subradiate.
 6. Heracleum alpinum. *Alpine Cow-Parsnep.*
Lin. spec. 359. syst. 283. Reich. 1. 688. Ger. prov. 246. 2. Krock. files. n. 424. Hall. helv. n. 810. Villars dauph. 2. 638. Barr. ic. 55. (Sphondylium).
Sphondylium alpinum glabrum. Baub. pin. 157. prodr. 83. ic. Park. theat. 954. f. 5. Baub. hist. 3. 163. Raii hist. 409. Mor. t. 16. f. 4.
Leaves simple, flowers radiate.

DESCRIPTIONS, &c.

1. [Root biennial, thick, yellowish without, white within, running deep into the ground, sweet to the taste, with some acrimony. Stem two, three, and four feet high, round, furrowed, rough, with white hairs, hollow within, branched from the bottom. Leaves hairy and scabrous, frequently a foot in length, and more than half a foot in breadth, pinnate and waved, the pinnae pinnatifid, lobed, ferrate, the odd one cloven into three to the base. The petioles spread out at the base into a membranaceous bag, woolly at the edge, and sheathing the umbels in their younger state. The

universal involucre consists only of one or two leaflets, and is sometimes wanting. The partial involucre has from six to eight linear leaflets. The universal umbel is flat, and has ten, twelve or more rays; the partial umbel has upwards of thirty. Florets white, greenish white, or purplish; they have a horned appearance before they expand, particularly the outer ones: these are very irregular, having their outer petals four times the size of the inner ones. In the central florets, they approach much nearer to regularity. Anthers greenish. Stigmas semitransparent. Seeds large, smooth, scarce visibly striated in the middle, having three rising ridges on each side; the leafy border is often purplish.—The central flowers are frequently abortive.

Native of most parts of Europe, in hedges and pastures, orchards, and near water; particularly in moist and fertile soils. It flowers from may to july.

The seeds have a strong smell, somewhat like that of a bug; they are accounted diuretic and stomachic. Linneus says that the plant is used in Scania against the dysentery.

Gmelin informs us that the inhabitants of Kamtschatka, about the beginning of july, collect the footstalks of the radical leaves, and after peeling off the rind, (which is very acrid) dry them separately in the sun, and then tying them in bundles, lay them up carefully in the shade in bags; in this state they are covered with a yellow saccharine efflorescence, tasting like liquorice; this, being shaken off, is eaten as a great delicacy.

The Russians distill an ardent spirit from the stalks thus prepared, by first fermenting them in water with the greater Billberries (*Vaccinium uliginosum*); which Gmelin says is more agreeable to the taste than spirits made from corn.

The leaves are a favourite food with Rabbits and Swine. Kine, Goats and Sheep also eat them; but horses are said not to be fond of them.

In German it is named *Heilkraut*, *Barenklau*, &c. In Dutch *Heilkruid*; *Beerenklaauw*. In Danish *Bior-neklöv*. In Swedish *Biornsloka*. In French *La Berce*. In Italian *Sfondilio*. In Spanish *Essondilio*. In Portuguese *Canabraz*. In Russian *Putschki*; *Slatkaja trawa*.

Our old writers call this plant *Cow-parsnep*, *meadow Parsnep*, and *Madnep*. In Norfolk it is called *Hog-weed*. The dry stalks are named, in common with those of some other umbellate plants, *Kexes* or *Keck-fies*.

2. The pinnae of the leaves are mostly three-lobed; the lower lobes long, and standing nearly at right angles, which gives the cruciate appearance; lobes linear-lanceolate, deeply ferrate, and the ferratures again ferrate. It is however merely a variety of the foregoing, and grows plentifully at Berkhamstead in Hertfordshire, near the place where Ray found it; and where both sorts may be seen growing from the same root. The distinction of the flosculose and radiate corolla is very uncertain, as Hudson well remarks.

Ray, who cultivated it in his garden at Cambridge, looks upon it as a mere variety: and Hudson expressly affirms that it degenerates to the foregoing, in a garden.

Linneus thus distinguishes it.—The stature is the same with that of H. Sphondylium, but the leaflets are extremely narrow, linear, at the common petiole pinnate crosswise, being four at each joint; the anterior leaflet lobed at the base. Flowers uniform, green and white. According to Krock, dark or yellowish green, not white.

β. This differs from the common sort in having the segments of the leaves very long, the primary ones being from half a foot to a foot in length, oblong, lanceolate, acute, smooth above, rough underneath, rarely and shortly subdivided: whilst the plant is young the leaves are palmate, divided into long segments: stem hirsute, with white hairs, four feet high, striated, furrowed: universal involucre either none, or like the partial one, with many linear, acute leaflets: petals white, subovate, bent in, the outer ones larger, cloven half way.

^a Ray, Withering, Pollich, Krock, Necker, Leers.

^b Gmelin, Withering, Lightfoot.

^c Woodw. Mss.

7. In the seed, flowers, anthers and pistils this agrees with *H. longifolium*; in the leaves it approaches nearer to *H. angustifolium*: it differs from both in having the segments of the leaves very narrow, shorter, very confluent: the leaves are mostly ternate, being divided into four or five segments only in the larger ones^d.

These three are rather to be considered as singular varieties than as species: hence Crantz has united them under the name of *H. proteiforme*.

3. Root biennial. Stem deeply furrowed, hispid. Leaves convex, even. Flowers flosculose, by no means radiate. Petals green, bent in, not at all emarginate. Universal involucre none. Pedicels or partial peduncles scabrous. At the base of the leaf-sheaths a thick white beard.—Native of Siberia^e.

From this species a spirit is drawn at Kamtschatka, called *Raka*, as related in *Cook's voy.* 3. 337. *where the process of making the spirit is described.* It is used also as food, like the first sort.—Mr. Miller cultivated it in 1768^f.

4. Root biennial. Stem much taller than the common sort, attaining the height of six feet, hirsute, round, slightly angular, branched. Leaves on long, channelled, rough petioles, tinged with purple, arising from a very large, obtuse, hirsute sheath; they have one pair of petioled pinnae, and a second pair sessile, with an odd one composed of three blunt lobes; they are rough on both sides, without hairs on the upper, and only on the ribs in the under surface, which is downy: they are the largest in this genus, sharply serrate, gashed and sinuate. Flowers large, radiate, greenish or yellowish white.—This species is of the same nature with the others, and is used for the same purposes^g.

Native of Italy, Silesia and Siberia. Cultivated by Gerard in 1597. He calls it *Hercules All-heal*.

5. Root knotty, with circles round it, and a few fibres. Stem from a foot to two feet in height, slightly angular, striated, solitary, smooth, soft, with a white pile only towards the top, scarcely branched. Leaves dusky green, on long hirsute petioles, pinnae sessile, gashed, three or five, lanceolate, rounded and eared, the outer odd one petioled, three-lobed, the lobes like the other pinnae, in the lower ones blunt, in the upper ones sharp, all serrate. Universal involucre one-leaved or none: partial sometimes of more, sometimes of fewer lanceolate, hirsute leaflets, at first spreading, afterwards bent back. Umbel eight or ten-cleft; in the umbellule, the rays are more in number, and more hirsute. Petals deeply and unequally cut, before they open reddish, and then from rose-colour becoming white. It differs from *H. Panaces*, in having the leaves veined and wrinkled, green, and scabrous on both sides; not soft, or paler underneath, or somewhat tomentose; peduncles scabrous, not even, as in *H. Panaces*: the stature is less^h.—Native of Austria, Carniola and Silesia; flowering in July and August.—Cultivated in 1748, by Mr. Millerⁱ.

6. Stem from eighteen inches to three feet high, round, smooth, jointed. Leaves smooth, thick, those next the root on long roundish petioles; subcordate, gash-serrate, not lobed; the stem-leaves gradually smaller, the upper ones very small, more three-lobed, and sinuate, sessile. Sheaths striated, whitish, smooth, often wanting in the lower leaves. Corollas white, radiate, smaller than in the rest^k.—Seguier joins this with the foregoing species, but the leaves resemble those of *Rubus Chamæmorus*, or the Fig, and are even, not scabrous, on their upper surface^l.—Native of the Swiss Alps, Provence and Silesia.—Known to Caspar Bauhin in 1595^m.—Cultivated in 1739, by Mr. Millerⁿ.]

PROPAGATION AND CULTURE.

Sow their seeds in the autumn; in the spring, when the plants are up, hoe the ground, cutting up the weeds, and thinning the plants, as directed for *Parsons*.

[*Herba admirationis.* See *Phlomis zeylanica*.

Herba articularis. See *Cucubalus Beben*.

Herba britannica. See *Rumex*.

^d Kröcker. ^e Linn. mant. & syst.

^g Kröcker & Gmel. fib. 1. 214.

^h Hort. kew.

ⁱ Ibid.

^k Kröcker.

^l Hort. kew.

^f Hort. kew.

^h Kröcker.

ⁱ Linn.

Herba crinium. See *Hibiscus surattensis*.]

Herba Gerardi. See *Ægopodium*.

[*Herba Impia.* See *Filago*.

Herba indica. See *Viola enneasperma*.

Herba moeroris. See *Phyllanthus Niruri*.

Herba mimosa. See *Oxalis sensitiva*.]

Herba Paris. See *Paris*.

[*Herba sancti Jacobi.* See *Senecio Jacobææ*.

Herba sancti Stephani. See *Circæa*.

Herba sentiens. See *Oxalis sensitiva*.

Herba stella. See *Plantago coronopifolia*.

Herba supplex. See *Epidendrum ovatum*.

Herba vitiliginum. See *Jussieua erecta*.

Herba viva. See *Oxalis sensitiva*.

Herba vulnerata. See *Bupleurum falcatum*.

Herb Bennet. See *Geum*.

Herb Christopher. See *Actæa*.

Herb Paris. See *Paris*.

Herb Robert. See *Geranium*.

HERITIERA. (So named in honour of Charles Louis L'Heritier; author of *Stirpes novæ*, *Sertum Anglicum*, *Cornus*, and *Geraniologia*, all magnificent works.)
Lin. gen. Schreb. n. 1766. Ait. hort. kew. 3. 546.
Class. 21. 8. Monoecia Monadelphia.—Syngenesia, Schreb.

GENERIC CHARACTER.

* *Male flowers* smaller than the females.

CAL. *Perianth* one-leaved, bell-shaped, five-toothed.

COR. none.

STAM. in the centre of the calyx, columnar, conic-fusulate, below the tip surrounded by *anthers* (five—ten) minute, united into a cylinder.

* *Female flowers* in the same panicle with the males.

CAL. as in the males.

COR. none.

STAM. *Filaments* none. *Anthers* ten, inserted into the receptacle at the base of the germs, two between each, twin, minute, perhaps barren.

PIST. *Germes* five, semiovate, compressed, smooth. *Styles* conical, short, in flowering time cohering at the tip. *Stigmas* club-shaped.

PER. *Drupe* juiceless, spreading very much, oval, flat-tish above, convex underneath, keeled and winged, one-celled.

SEEDS solitary, subglobular, large.

OBS. *This character is formed from dried specimens, compared with Koenig's manuscript descriptions, made from living plants on the spot.*

ESSENTIAL CHARACTER.

Cal. five-toothed. *Cor.* none.

MALE. *Anthers* ten, without filaments.

FEM. *Germes* five. *Drupe*s with one subglobular seed.

SPECIES.

1. *Heritiera littoralis.* *Looking-glass Plant.*

Ait. hort. kew. 3. 546.

Samandura. *Lin. zeyl. n. 433.*

Nagam. *Rheed. mal. 6. 37. t. 21.*

DESCRIPTION, &c.

This is a tree with alternate, oval-oblong, obtuse, perennial, thick, veined, smooth, quite entire, petioled leaves^a.

Native of the East-India islands. Found on Ceylon by Koenig, and on Pulo Condore, by Mr. Dav. Nelson.—Introduced in 1780, by Sir Joseph Banks, Bart.—*Aturus littorea* of Rumphius (amb. 3. 95. t. 63.) agrees with this entirely in the leaves and fruit, but the flowers described by him are very different^b.]

HERMANNIA. (This name was given by Tournefort, in memory of the celebrated Paul Hermann, who practised physic in Ceylon and at the Cape of Good Hope, and was afterwards professor of Botany at Leyden.)

Lin. gen. n. 828. Reich. 893. Schreb. 1109.

Tournef. t. 432. Dill. elth. 147. Cavan. diff.

6. 327. Juss. 289. Gartn. 2. t. 112.

Class. 16. 2. Monadelphia Pentandria.

Nat. order of Columniferae.—Tiliaceæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, five-cleft, roundish, inflated: the little clefts bent in: permanent.

COR. pentapetalous, spiral against the sun: *claws* the

^a Linn. zeyl.

^b Hort. kew.

length of the calyx, with a little membrane on each side converging into a cowl'd nectareous tube: border spreading, broadish, blunt.

STAM. Filaments five, broadish, very slightly coalescing at bottom into one body. Anthers upright, acuminate, converging.

PIST. Germ roundish, five-sided, five-cornered. Styles five, filiform, approximating, subulate, longer than the stamens. Stigma simple.

PER. Capsule roundish, five-sided, five-celled, gaping at the top.

SEEDS very many, small, (kidney-form. G.)

ESSENTIAL CHARACTER.

Styles five. Caps. five-celled. Petals semitubular at the base, oblique.

SPECIES.

1. *Hermannia althæifolia*. Marsh-Mallow-leaved *Hermannia*.

Lin. spec. 941. Reich. 3. 302. hort. cliff. 342. Curt. magaz. 307. Pet. gaz. t. 34. f. 2. Comm. hort. 2. t. 79. (Ketmia).

Leaves ovate, crenate, plaited, tomentose, flowering calyxes bell-shaped, angular, stipules oblong, leafy.

[2. *Hermannia plicata*. Plaited-leaved *Hermannia*.

Ait. hort. kew. 2. 411.

Leaves cordate-ovate, toothletted, plaited, tomentose, flowering calyxes oblong-ovate, subcylindrical.

3. *Hermannia candicans*. White *Hermannia*.

Ait. hort. kew. 2. 412.

Leaves ovate, subcordate, blunt, tomentose, flowering calyxes patulous, somewhat angular, stipules subulate.

4. *Hermannia salicifolia*.

Lin. syst. 610. suppl. 302.

Leaves ovate, entire, wrinkled, tomentose-hispid, flowers drooping.

5. *Hermannia biserrata*.

Lin. syst. 610. suppl. 302.

Leaves ovate, lanceolate, unequal, serrate, smooth, flowers drooping.

6. *Hermannia trifurca*.

Lin. spec. 942. syst. 610. Reich. 3. 302. amoen. 6. afr. 24. Burm. ind. 18. Volk. norib. t. 24. (Althæa).

Leaves lanceolate, entire and three-toothed, flowers in racemes, pointing one way.]

7. *Hermannia alnifolia*. Alder-leaved *Hermannia*.

Lin. spec. 942. syst. 610. Reich. 3. 303. hort. cliff.

342. Berg. cap. 166. Gärtn. fruct. 2. 146.

Mill. illustr. ic. Comm. hort. 2. 155. t. 78. (Ketmia).

Pluk. mant. t. 239. f. 1. Curt. magaz. 299.

Leaves wedge-shaped, marked with lines, plaited, crenate-emarginate.

[8. *Hermannia odorata*. Sweet-scented *Hermannia*.

Ait. hort. kew. 3. 412.

Leaves oblong-lanceolate, tomentose, wrinkled underneath, the lower ones truncate and toothletted; calyxes pitcher-shaped and angular.]

9. *Hermannia hyssopifolia*. Hyssop-leaved *Hermannia*.

Lin. spec. 942. syst. 610. Reich. 3. 303. hort. cliff.

342. upf. 195. Giseck ic. 1. t. 16.

Leaves lanceolate, blunt, serrate.

10. *Hermannia lavendulifolia*. Lavender-leaved *Hermannia*.

Lin. spec. 942. Reich. 3. 303. hort. cliff. 342. Dill.

elth. 179. t. 147. f. 176. Curt. magaz. 304.

Leaves lanceolate, blunt, quite entire.

[11. *Hermannia denudata*. Smooth *Hermannia*.

Lin. syst. 611. suppl. 301. Cavan. diff. 6. 329.

t. 181. f. 1.

Leaves lanceolate, sharp, even, serrate at top.

12. *Hermannia glabrata*.

Lin. syst. 611. suppl. 301.

Leaves lanceolate, sharp, gasb-serrate, smooth, flowers drooping.

13. *Hermannia ciliaris*.

Lin. syst. 611. suppl. 302.

Leaves lanceolate, sharp, entire and serrate, ciliate.

14. *Hermannia linifolia*.

Lin. syst. 611. Reich. 3. 303. Burm. prodr. 18.

Leaves linear, peduncles one-flowered.

15. *Hermannia filifolia*.

Lin. syst. 611. suppl. 302.

Leaves linear, three-sided, quite entire.

16. *Hermannia trifoliata*.

Lin. spec. 942. Reich. 3. 303. hort. cliff. 342. mant. 431.

Leaves ternate, sessile, plaited, retuse, tomentose.

17. *Hermannia triphylla*.

Lin. spec. 942. Reich. 3. 304. amoen. 6. afr. 25.

Leaves ternate, petioled, flat, obovate.]

18. *Hermannia grossularifolia*. Gooseberry-leaved *Hermannia*.

Lin. spec. 943. syst. 611. Reich. 3. 304.

Leaves lanceolate, pinnatifid.

[19. *Hermannia pulchella*.

Lin. syst. 611. suppl. 302.

Leaves lanceolate, pinnatifid, pinnae entire and gasbed; stem upright, even.

20. *Hermannia diffusa*.

Lin. syst. 611. suppl. 302.

Leaves lanceolate, pinnatifid, pinnae entire and toothed; peduncles capillary, two-flowered; stem procumbent.]

21. *Hermannia hirsuta*.

Mill. dict. n. 8.

Leaves simple and ternate, hirsute, sessile.

DESCRIPTIONS, &c.

[The *Hermannias* are Shrubs from eighteen inches to six or seven feet in height. Natives of the Cape of Good Hope. Leaves alternate, simple, stipuled. Flowers axillary and terminating, frequently two together. Corolla yellow.]

1. This seldom rises more than two feet and a half high, the stem is not very woody, and the branches are soft and slender. The flowers are produced in loose panicles at the ends of the branches; they are larger than those of the Alder-leaved sort, and have hairy calyxes: they come out in June and July, and frequently again in the autumn.

[Peduncles from the axils of the leaves, commonly three together, producing at the top two flowers on each, under three lanceolate leaflets^a.

Cultivated in 1728, by Mr. Miller^b.

2. Found at the Cape by Mr. Masson, and introduced in 1774. It flowers in November and December.

3. This also was found at the same place by Mr. Masson; and was introduced at the same time. It flowers from April to June^c. The whole plant is covered with a very white down. The leaves are serrate, except near the base.

4, 5. Found at the Cape by Thunberg^d.

6. This is very nearly allied to *H. alnifolia*. Leaves hoary, scarcely tomentose, hardish, the lower ones blunt and three-cusped. Flowers in a terminating raceme, alternate, hanging down, mostly solitary. Petals blue, less cowl'd than the others^e.]

7. This rises with a shrubby stalk six or eight feet high, dividing into many erect irregular branches, covered with a brown bark. Leaves narrow at their base, but broad and round at the top, about an inch long, and three quarters of an inch broad at the top. The flowers are produced in short spikes on the upper part of the branches; they are of a pale yellow colour, and small: they appear in April and May, and the seeds often ripen in August.

[The capsule is within the calyx, which is slightly inflated; it is on a very short peduncle; the texture is thin, and the colour is bay: the partitions are fastened to the middle of the back of the valves, and the seeds are fixed to the central margins of the partition on both sides: these are eight to twelve in each cell, small, of an angular kidney form, smooth, dirty cinnamon colour; with a tubercled navel in the middle of the belly^f.

Cultivated in 1728, by Mr. Miller^g.

8. Found at the Cape by Mr. William Paterson; and introduced in 1780 by the Countess of Strathmore. It flowers most part of the year^h.]

^a Linn. spec.

^b Hort. kew.

^c Ibid.

^d Linn. suppl.

^e Linn. amoen.

^f Gärtner.

^g Hort. kew.

^h Ibid.

9. This rises with a shrubby upright stalk to the height of seven or eight feet, sending out many woody lateral branches, growing very erect. Leaves about an inch and half long, and half an inch broad, serrate towards the end: the flowers come out in small bunches from the side of the stalk; they are of a pale straw-colour, appear in may and june, and are frequently followed by seeds, which ripen the latter part of august.

[Leaves broader than in the next species. Calyxes inflated. Umbel of the corolla very short, sulphur-coloured, reflex. Stem upright, stiff¹. Cultivated in 1725, by Mr. Miller^k.]

10. This sort has shrubby branching stalks, which are very bushy, but seldom rise more than a foot and half high; the branches are very slender, and have hairy, pale-green leaves on them of different sizes; some of them are two inches long, and an inch broad at their ends, but their common size is seldom more than one inch long, and half an inch broad; they are entire, and sit pretty close to the branches. The flowers come out from the side of the stalk singly, are small and yellow; they continue most part of the summer.

[Cultivated in 1732, in Dr. Sherard's garden at Eltham^l.

11. Stems upright, round, smoothish, stiff. Leaves petioled, remote, three-nerved underneath: floral leaves quite entire. Stipules lanceolate, scarcely longer than the petioles, nerved. Flowers from the top, from the alternate oppositions of the stipules, or from a two-flowered peduncle, peduncled. Calyx even, half-five-cleft. Corolla yellow. Found at the Cape by Sparrmann^m: and by Mr. Fr. Masson. Introduced 1774. It flowers from may to julyⁿ.

12, 13. Found at the Cape, by Thunberg. The latter will be a species of Mahernia, if that genus is to be separated from Hermannia^o.

14. Native of the Cape, with all the other sorts.

15. Found at the Cape by Thunberg^p.

16. Stem creeping: branches narrow. Leaves ternate; the middle leaf wedge-shaped, doubled, subseriate, three-toothed, with the tip recurved. Flowers pendulous. Calyx bell-shaped, tomentose, half-five-cleft; the clefts dilated, rounded. The corolla narrower than the calyx^q.

17. Stems herbaceous. Stipules small. Petals the length of the leaves. Peduncles still longer, five-flowered, with bractes. The whole plant has hairs thinly scattered over it^r.]

18. This is a shrub of lower stature than the Alder-leaved sort, but sends out a greater number of branches, which spread wide on every side; the leaves are smaller than in that, are rough and sessile. The flowers are produced in short close spikes at the end of every shoot, so that the whole shrub seems covered with them; they are of a bright yellow, and appear towards the end of april, but are not succeeded by seeds in England.

[19, 20. Found at the Cape, by Thunberg^s.]

21. This rises with a shrubby hairy stalk about two feet high, sending out many side branches, which grow very erect. Leaves oblong, veined, single or in threes, in the latter case the middle leaf is largest. The flowers are produced towards the end of the branches; they are large, and of a deep yellow colour, with large, swollen, hairy calyxes. It continues flowering most part of the summer. Mr. Miller raised this from seeds which came from the Cape of Good Hope.

PROPAGATION AND CULTURE.

These plants are all propagated by planting cuttings of them during any of the summer months, in a bed of fresh earth, observing to water and shade them until they are well rooted, which will be in about six weeks after planting; then take them up, preserving a ball of earth to their roots, and plant them into pots filled with light fresh earth, placing them in a shady situation until they have taken fresh root; after which they may be exposed to the open air, with Myrtles,

¹ Linn. spec. & syst.

^k Hort. kew.

^l Dill. elth.

^m Linn. suppl.

ⁿ Hort. kew.

^o Linn. suppl.

^p Ibid.

^q Linn. mant.

^r Linn. argoen.

^s Linn. suppl.

Geraniums, &c. until the middle or end of october; when they must be removed into the green-house, observing to place them in the coolest part of the house, where they may have as much free air as possible; for if they are too much drawn in the house, they will appear very faint and sickly, and seldom produce many flowers; whereas, when they are only preserved from the frost, and have a great share of free air, they will appear strong and healthy, and produce large quantities of flowers in april and may; during which season they make a very handsome appearance in the green-house: they must also be frequently watered, and will require to be new potted at least twice every year, i. e. in may and september; otherwise their roots will be so matted, as to prevent their growth.

These plants rarely produce good seeds with us, except the ninth and twenty-first sorts, which ripen their seeds every year in England; the others rarely producing any, I suppose this may be accounted for by their having been long propagated from cuttings; for those plants which I have raised from seeds, have been fruitful two or three years after, but I have always found those plants which have been propagated by cuttings taken from these, have soon become barren: the same thing I have observed in many other plants, therefore those who are desirous to continue their plants fruitful, should constantly raise them from seeds. These, as also those which are obtained from abroad, must be sown upon a moderate hot-bed; and when the plants come up, they must be transplanted into small pots, and plunged into another very moderate hot-bed, in order to promote their rooting; after which they must be hardened by degrees, to endure the open air in summer, and may then be treated as the old plants.

[Hermannia pinnata. See Mahernia.

HERMAS. (*Equis*, is one of the names of Mercury. But I presume that this plant may derive its name from *Equis*, a prop.)

Lin. gen. Reich. n. 1270. Schreb. 1594. Juss.

225. Gertn. t. 85.

Class. 23. 1. Polygamia Monoecia.

Nat. order of Umbellatæ or Umbelliferæ.

GENERIC CHARACTER.

* Hermaphrodite, umbel terminating.

CAL. Umbel universal many-rayed, hemispheric.—Partial many-rayed: central ray flower-bearing; the rest without any floret.

Involucre universal many-leaved, lanceolate, short, permanent.—Partial of one or two leaves, lanceolate, the length of the partial umbel.

Proper perianth obscure, five-toothed.

COR. universal flosculous.—Of the proper, petals five, oblong-ovate, upright, flat, entire, equal.

STAM. Filaments five, filiform, shorter than the petals. Anthers barren, oblong.

PIST. Germ inferior, compressed, larger than the corolla. Styles two, filiform, upright, longer than the corolla. Stigmas obtuse.

PER. none. Fruit orbicular, emarginate at the base, gaping at the angles.

SEEDS two, cordate-orbicular, compressed, flat, margined, marked with a single longitudinal elevated streak.

* Male, umbels lateral, later, of the same plant.

CAL. Umbel universal as of the hermaphrodite.

Partial many-rayed; the rays all flower-bearing.

Involucre as in the hermaphrodites.

Perianth scarcely any.

COR. as in the hermaphrodites.

STAM. Filaments five, filiform, length of the corollet. Anthers pollen-bearing, oval, nearly twin.

ESSENTIAL CHARACTER.

HERM. Umbel terminating. Invol. universal and partial. Umbellets with truncate rays, the central one floriferous. Pet. five. Stam. five, barren. Seeds in pairs, suborbiculate.

MALE. Umbels lateral, with universal and partial involucre. Umbellets many-flowered. Pet. five. Stam. five, fertile.

SPECIES.

1. Hermas depauperata.

Lin. syst. 913. mant. 299. Reich. 4. 337.

Bupleurum villosum. Lin. spec. 343.

Perfoliata fol. oblongis sinuosis subtus incanis. *Burm. afr.* 196. t. 71. f. 2.

Stem shrubby, leaves oblong, embracing, toothed, villose underneath.

2. *Hermas gigantea*.

Lin. syst. 913. *suppl.* 435.

Leaves lanceolate-ovate, lanuginose above, underneath tomentose, entire.

3. *Hermas capitata*.

Lin. syst. 913. *suppl.* 435.

Stem tomentose, leaves subcordate, serrate, umbels capitate.

4. *Hermas quinquedentata*.

Lin. syst. 913. *suppl.* 436.

Stem smooth, leaves ovate, five-toothed, tomentose underneath, umbel solitary.

5. *Hermas ciliata*.

Lin. syst. 913. *Suppl.* 436.

Stem smooth, leaves ovate, ciliate, tomentose underneath, umbels several.

DESCRIPTIONS, &c.

1. This is an umbelled plant, with the leaves radical, subpetioled, cordate, coriaceous, white tomentose underneath. Stem high, simple, naked, with two or three alternate, remote, little scales. Peduncles from the bosom of the scales and the top of the stem. Umbels at the ends of the stem and branches, peduncled, compound: the end one hermaphrodite female, many-rayed, with several universal and partial pedicels; florets of the umbellets only solitary, the rest of the pedicels being truncate without a flower: the lateral umbels male, with all the rays of the umbels flower-bearing. Native of the Cape of Good Hope^a.

2. Leaves radical, petioled, obscurely crenate, a foot in length, and a span in breadth. the upper surface villose, the lower very closely white-tomentose. Stem four feet high, with a small leaf or two towards the lower part; the axils villose. Umbel terminating, peduncled; and below this four flowering branchlets in whorls, with one or two lower branches, which are also floriferous. Involucre many-leaved, linear, acute, shorter than the umbel. Primordial rays very abundant. Involucels commonly three-leaved, lateral, the length of the flowers. Rays of the umbellets several. Petals lanceolate. Stamens five. The wooll scraped from the leaves is used for tinder at the Cape of Good Hope, as that from *Artemisia* is in China and Japan.

3. Leaves petioled, radical, bluntish, an inch long, veined, white-tomentose underneath. Scape leafless, pubescent, half a foot high. Heads three, alternate, peduncled, composed of florets scarce visibly pedicelled, as in the flowers of the class Syngenesia. Universal involucre consisting of about eight lanceolate leaflets, the length of the flowers. Rays of the umbel very short. Involucels of the umbellets of a single, lanceolate, lateral leaflet. Florets pedicelled; males two or three, white. Petals entire. Stamens five.

4. This is very distinguishable from the rest by its small leaves, with five nice, deep serratures.

5. This, with all the rest, is a native of the Cape of Good Hope; where the two last were discovered by Thunberg^b.

PROPAGATION AND CULTURE.

See BUPLEURUM.

HERMESIAS. See *Brownea*.

HERMINIUM. See *Ophrys Monorchis*.

HERMODACTYLUS. See *Iris*.]

HERNANDIA. (From Francis Hernandez, Physician to Philip II. King of Spain; a traveller, and author of the history of Mexico, 1648.)

Lin. gen. n. 1049. *Reich.* 1141. *Schreb.* 1411.

Plum. 40. *Jacqu. amer.* 245. *Aubl.* 329.

Gærtn. t. 40. *Juss.* 81.

Class. 21. 3. Monoecia Triandria.

Nat. order of *Tricoccæ*.—*Lauri*; *Juss.*

GENERIC CHARACTER.

* Male flowers by pairs, lateral in each umbel.

CAL. Involucre partial, four-leaved, three-flowered; leaflets ovate, obtuse, spreading very much.

Perianth none.

^a Linn. mant.

^b Linn. suppl.

COR. Petals six, subovate, spreading: the three inner ones narrower.

Nectary; six glands; round headed, placed round the filaments.

STAM. Filaments (three) shorter than the petals, inserted into the receptacle. Anthers upright, oblong, large.

* Female flower intermediate.

CAL. Involucre common with the males.

Perianth inferior, one-leaved, bell-shaped, entire, permanent. (inflated. G.)

COR. Petals eight, of which four are interior and narrower, all sitting on the germ. (Petals six. G.)

Nectary; glands four, obovate, alternate with the interior petals.

PIST. Germ roundish. Style filiform. Stigma oblique, somewhat funnel-shaped, large.

PER. Drupe dry, ovate, eight-furrowed, one-celled, inclosed in a very large, inflated, roundish, fleshy, coloured perianth, with the mouth entire.

SEED. Nut globular, slightly depressed.

OBS. Corolla monopetalous, in the male six-parted, in the female eight-cleft. *Aubl.*

ESSENTIAL CHARACTER.

MALE. Cal. three-parted. Cor. three-petalled.

FEM. Cal. truncate, quite entire. Cor. six-petalled. Drupe hollow, with an open mouth; and a moveable nucleus.—(Nut superior, clothed with the calyx inflated. Seed globular, bony. *Gærtn.*)

SPECIES.

1. *Hernandia sonora*. Whistling *Hernandia*.

Lin. spec. 1391. *Reich.* 4. 120. *hort. cliff.* 485.

t. 23. *fl. zeyl. n.* 423. *Brown. jam.* 373. *Jacqu.*

amer. 245. *piet.* 120. *Plum. gen.* 6. *Pluk. alm.*

t. 208. *f.* 1. *Rumph. amb.* 2. 257. *t.* 85. *Petiv.*

gaz. t. 43. *f.* 1.

Leaves peltate.

[2. *Hernandia ovigera*. Egg-fruited *Hernandia*.

Lin. spec. 1392. *Reich.* 121. *Gærtn. fruct.* 193.

Rumph. amb. 3. 193. *t.* 123.

Leaves ovate, petioled at the base.

DESCRIPTIONS, &c.

These are trees, the wood of which is whitish and brittle. The leaves are alternate, peltate or subpeltate. The flowers are borne in spikes or corymbs, axillary or terminating, on peduncles each having one bracte, within a four-leaved involucre, and bearing three flowers, two male on pedicels, and one female sessile. This genus is related to *Myristica*, notwithstanding the inner superior calyx^a.

1. This is an upright, lofty tree, with an elegant head. The flowers are of a pale yellow colour, in paniced racemes; the calyxes of the fruit are yellow^b.]

It is very common in the West-Indies, in gullies, near rills of water; the English there call it Jack-in-a-box, [and the French Myrobolan. If it be Rumphius's plant, it is also a native of the East-Indies.

It has also been found by the late circumnavigators, in the Society and Friendly islands^c. Dr. Patrick Browne says, it is common in Barbadoes and Mount-ferrat, where it grows to a considerable size; but that he had not seen it in Jamaica, though he had been credibly informed that it is frequent in the parish of Portland. He attributes the whistling noise to the cups that sustain and partly envelop the nuts; these, he adds, are very large, and as they move in the wind, produce sound enough to alarm unwary travellers. The seeds are very oily.

It was cultivated in 1714, by the Dutchess of Beaufort^d.

2. Gærtner thus describes the fruit from a specimen in the collection of Sir Joseph Banks. It is a nut, within the enlarged, membranaceous, inflated calyx; in substance coriaceous and hard; in form from a swelling base narrowing upwards like a pitcher; marked with eight prominent ribs, and a convex knob; ending at top in eight swellings or risings; black, smooth, not opening by valves. Shell larger than the seed, very thick and spongy near the knob, in other parts

^a Jussieu genera.

^b Jacquin.

^c Forster fl. austr.

^d Hort. kew.

thin, separate all round from the seed, and filled with a thin cellular substance. Seed one, large, globular, bony, crested at top with a flattened rim, or the whole surrounded by this rim in manner of a ring; it is smoothish, of a pale testaceous, or reddish bay colour. There is no receptacle; but the seed coheres by its tip only to the fungous knob of the shell; the rest of it being enveloped in the cellular membrane. The seed has two coverings: the outer, crustaceous, hard, of a blackish chesnut colour; the inner, membranaceous and spongy, buried deep in the clefts of the kernel. There is no albumen, but the embryo is the full size of the seed, umbilicated at both ends, tomentose and inverted: the cotyledons, when ripe, adhere together pertinaciously; they divide into four or five larger lobes, and these again irregularly into several other smaller ones; they are fleshy, oily, friable and whitish. The radicle is acuminate, very small, placed in the flattened top of the embryo, and stretches upwards.

The fruit of the first species agrees with this in every respect, except that the seed has no ring, and is of a globular form, only a little flattened.

This is a native of the East-Indies: but has not yet been introduced into culture in Europe.]

PROPAGATION AND CULTURE.

1. Sow the seeds in a hot-bed in the spring; when the plants are two inches high, transplant each into a separate pot, filled with fresh rich earth, and plunged into the hot-bed again, observing to water and shade them until they have taken root; after which admit air to them, by raising the glasses, in proportion to the warmth of the air, or the heat of the bed; and water them frequently. As the plants advance, remove them into larger pots, being careful not to break the roots, and to preserve a good ball of earth to them: if their leaves hang, screen them from the sun until they have taken new root. Shift them in July, that they may be well rooted before the cold approaches. Keep them constantly in the bark-stove: in winter give them a moderate share of heat, and in summer plenty of air, when the weather is hot. With this management, the plants will grow to the height of sixteen feet or more; and the leaves being very large, will make a beautiful appearance in the stove.

HERNIANA. See *Parietaria*.

HERNIARIA. (From *Hernia*, a Rupture; for which disorder it was formerly imagined to be a cure.)

Engl. Rupture-wort.

Fr. *Turquette*, *Herniole*.

Lin. gen. n. 308. Reich. 336. Schreb. 434. Tourn. 288.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Holoraceæ*.—*Amaranthi*, Juss.

Apetalæ, Rati, Tournef., Haller, &c.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, five-parted, sharp, spreading, coloured within, permanent.

COR. none.

STAM. *Filaments* five, subulate, minute, within the parts of the calyx. *Anthers* simple. *Filaments* other five, alternate, with the parts of the calyx, barren.

PIST. *Germ* ovate. *Style* scarcely any. *Stigmas* two, acuminate, the length of the style.

PER. *Capsule* small, in the bottom of the calyx, covered, scarcely gaping.

SEED solitary, ovate-acuminate, shining.

OBS. *H. fruticosa* drops a fifth part of the number in the calyx and stamens.

H. lenticulata differs a little in the character from its congeners.

ESSENTIAL CHARACTER.

Cal. five-parted. Cor. none. Stam. five, barren, besides the fertile ones. Caps. one-seeded.

SPECIES.

1. *Herniaria glabra*. Smooth Rupture-wort.

Lin. spec. 317. Reich. 1. 615. mat. med. 72. Hudf. angl. 108. Wither. 250. Engl. bot. 206. Hall. helv. n. 1552. Scop. carn. n. 276. Pollich, pal. n. 243. Leers, herb. n. 189. Krock. files. n. 368. Allion. pedem. n. 2056. Villars dauph. 2. 555. Fl. dan. t. 529. Blackw. herb. t. 320. Plenck, ic. t. 171. Baub. hist. 3. 378. 3.

Herniaria. Dod. pempt. 114. Ger. 454. emac. 569.

Petiv. brit. t. 10. f. 9. Rati hist. 214. syn. 160.

Polygonum minus, f. *Millegrana major*. Baub. pin. 281.

Millegrana major, f. *Herniaria vulgaris*. Park. theat. 446. t. 447. f. 9.

Herbaceous and smooth.

2. *Herniaria hirsuta*. Hairy Rupture-wort.

Lin. spec. 317. Reich. 616. Hudf. angl. 109:

Wither. 250. Hall. helv. n. 1553. Scop. carn.

n. 277. Pollich, pal. n. 244. Allion. pedem. n.

2057. Baub. hist. 3. 379: 1. Rati syn. 161.

Mor. hist. f. 5. t. 29. f. 2. Petiv. brit. t. 10.

f. 10. Zannich. ic. 284. Villars dauph. 2. 556.

Herbaceous and hairy.

3. *Herniaria fruticosa*. Shrubby Rupture-wort.

Lin. spec. 317. Reich. 616. amoen. 4. 269: Loeft.

it. 72. & 128. D'Asso, aragon. n. 219:

H. frut. viticulis lignosis. Baub. pin. 282.

Polygonum herniariæ folio & facie, perampla radice:

Baub. hist. 3. 378. Lob. ic. 85.

P. frut. erectum hispanicum. Barrel. ic. 713.

Stems shrubby; flowers four-cleft.

4. *Herniaria lenticulata*.

Lin. spec. 317. Reich. 616. Burm. ind. 78.

Stems somewhat shrubby; leaves ovate-oblong, hairy.

DESCRIPTIONS, &c.

1, 2. The two first sorts are low trailing plants, extending seven or eight inches each way; they have leaves like the smaller Chickweed, in the first smooth, in the second hairy: the flowers come out in clusters from the side of the stalks at the joints; they are small, of a yellowish green, and make no appearance.

1. [This species is chiefly distinguished from the second by the smoothness of the habit. The stalks are trailing and many, forming a little tuft, the length of a finger, or at most six inches, round, with many alternate branches. Leaves ovate or ovate-lanceolate, something like those of wild Thyme, opposite, sessile or subsessile, smooth, bright green, quite entire, sharpish at the end, of different sizes, the larger two lines and an-half in length, and above a line in breadth. Flowers axillary, glomerate, sessile, six or eight together, at the joints of the stem and branches, with small ovate-lanceolate, dry, white, ciliate bractes. Calyx often four-parted, small, smooth, greenish, or yellowish green. Filaments very short, and only four in number when the calyx is four-parted; the barren ones more slender and whiter than the others. Anthers very small and yellow. Styles two, short, with subglobular stigmas. Capsule, if it may be considered as such, membranaceous, compressed. Seed dark-purple, shining, deeply emarginate at the top.—According to Scopoli, the flowers are usually solitary, and on short peduncles^a.

It is common in Switzerland, in sandy soils, in Sweden, Denmark, Germany, France, Italy, Carniola; with us in England, at the Lizard Point, Cornwall. Flowering in July.

This plant was formerly in some reputation not only for curing ruptures, but the stone, gravel and dropsy; it was also given in disorders of the eyes. It has now fallen into utter disuse. Withering and Pollich say, it is saltish and astringent: increases the secretions by the kidneys; and that the juice takes away specks in the eye. According to Krock it is agreeable to sheep.]

Mr. Miller informs us, that the herb-women used commonly to bring the Parsley Breakstone (*Aphanes arvensis*) to market, instead of this plant. [It is of little consequence which of them is brought; and neither the one nor the other is now much enquired after.

2. Linneus seems inclined to think that Hairy Rupture-wort is only a variety of the foregoing. Mr. Ray had given the same opinion before, and Dr. Stokes follows these great judges. Trew also has made one species of them. Pubescence is certainly an equivocal specific distinction. Haller acknowledges that the habit of this is like that of the foregoing, and that the leaves and bractes are the same: he observes, however, that it is smaller, and that it is easily distinguished,

^a Haller, Scop. Pollich, Leers, Krock.

by the small number of flowers in the glomerules; and by the greater size of each. According to Scopoli, this is upright, more branched, and the flowers are sessile, as far as six in number together: but Dr. Stokes affirms that they are not more sessile than those of the smooth fort. Pollich adds, that it is of a darker green colour. Whether specifically different or not, it is easily known by the whole plant being hairy.

It is native of Germany, Switzerland, Italy, Carniola; and with us has been found by Colney-Hatch near Barnet. It flowers in July and August.]

3. *Skrubby Rupture-wort* has stalks trailing on the ground, with small hairy leaves like the second fort; the flowers are also very like that. This is shrubby and perennial; [it is a native of Spain.

4. The perianth of this is scarcely spreading. It has a very small, five-parted corolla. Five capillary filaments. Germ roundish, with an obtuse stigma. Capsule one-celled, wrapped up in the calyx. Seed subovate, compressed. In habit it approaches very near to common *Hernaria*, but is very soft^b. Linneus had not seen the flowers, but received the character of the fructification from Aymen.—It is a native of the East-Indies, and the Cape of Good Hope; and is said to have established itself in Spain and the South of France. The plant which has been taken for it in England, seems to be only a variety of the second fort. Plukenet's figure, copied in *Petiv. brit. t. 10. f. 6.* which is quoted for it, is *Glaux maritima*.]

PROPAGATION AND CULTURE.

1, 2. The two first being annual plants, must be permitted to shed their seeds, whereby they are better preserved than if sown.

3. The third, being perennial, may be propagated by cuttings.

But as none of them are plants of any beauty, they are rarely preserved in gardens.

[*HERNIARIA*. See *Bufonia*, *Illecebrum*, *Parietaria*, *Polycnemum*.

HERPETICIA. See *Cassia alata*.]

HESPERIS. (of Pliny. From *εσπερος*. Because the flower smells sweet in the evening.)

Engl. Rocket or Dame's Violet.

Fr. *Julienne*.

Lin. gen. n. 817. Reich. 881. Schreb. 1093.

Tournef. 108. Juss. 238.

Class. 15. 2. *Tetradynamia Siliquosa*.

Nat. order of *Siliquosæ*.—*Cruciformes*. *Tournef.*—*Cruciferae*. *Juss.*

GENERIC CHARACTER.

CAL. Perianth four-leaved: leaflets lanceolate-linear, from parallel converging, at top incumbent, at bottom gaping, deciduous: of these two opposite ones are gibbous at the base.

COR. four-petalled, cruciform. Petals oblong, the length of the calyx, a little bent back obliquely contrary to the sun's apparent motion, ending in attenuated claws, the length of the calyx.

STAM. Filaments six, subulate, the length of the tube; two of them shorter by half than the others. Anthers linear, upright, reflex at the tip.

An acuminate honied gland between each shorter stamen and the germ, and surrounding the stamen.

PIST. Germ the length of the calyx, prismatic, four-cornered. Style none. Stigma two-parted, placed on the inside, oblong, upright, forked at the base, converging at the tip, withering.

PER. Silique long, pressed flat, stiff and straight, two-celled, two-valved; the valves of the same length with the partition.

SEEDS very many, ovate, compressed.

Obs. In *H. lacera* the siliques are knotty and three-cusped.

ESSENTIAL CHARACTER.

Petals bent obliquely. A gland within the shorter stamens. Silique stiff. Stigma with a forked base and converging tip. Cal. closed.

SPECIES.

1. *Hesperis tristis*. Night-smelling Rocket.

Lin. spec. 927. Reich. 3. 269. hort. cliff. 335.

upf. 187. Jacqu. austr. 2. t. 102.

^b *Linn. spec.*

H. montana pallida odoratissima. Baub. pin. 202.

Mor. hist. 2. 252. f. 3. t. 10. f. 3.

H. pannonica. Cam. hort. t. 18. Park. parad. 262.

t. 263. f. 4.?

H. montana & prima. Clus. Raii hist. 791.

Viola matronalis flore obsoleto. Ger. emac. 462.

f. 3.

Leucoium melancholicum. Best. cyst. Ger. emac.

463. 4.

Stem hispid, branched, spreading.

2. *Hesperis matronalis. Garden Rocket.*

Lin. spec. 929. syst. 599. Reich. 3. 269. hort.

cliff. 335. upf. 188. Gmel. fib. 2. 259. n. 18.

t. 58. Allion. pedem. n. 982. Villars-dauph.

3. 316.

H. hortensis. Baub. pin. 202. Raii hist. 790. Mor.

hist. 2. 251. f. 3. t. 10. f. 1.

Viola matronalis. Dod. pempt. 161.—purpurea &

alba. Ger. 376. 1. emac. 462. 1.

β. *Hesperis sibirica. Siberian Garden Rocket.*

Lin. spec. 927. 3. Gmel. fib. 3. 260. n. 19. Amman.

ruth. n. 73. 74. Villars dauph. 3. 316.

Stem simple, upright; leaves ovate-lanceolate, toothblotted, petals emarginate, with a point.

3. *Hesperis inodora. Unfavoury Rocket.*

Lin. spec. 927. Reich. 269. Jacqu. austr. 4. t.

347. Hall. belv. n. 448. D'Affo, aragon. n.

621.

H. sylvestris. Crantz, austr. 32. n. 2. Allion. pedem.

n. 983.—inodora. Baub. pin. 202.

H. pannonica inodora. Baub. hist. 2. 878. f. 2. Raii

hist. 792. Park. theat. 628. t. 1682. f. 3.

H. altera pann. inod. sylvestris. Clus. hist. 1. 296.

item. H. 3. ejusd.

Stem simple, upright, leaves subhastate, toothed, blunt.

4. *Hesperis africana. African Rocket.*

Lin. spec. 928. Reich. 270.

Leucoium gallicum folio halimi. Bocc. sic. t. 42.

f. 1.

Stem very much branched and diffused, leaves lanceolate, petioled, sharply toothed, scabrous, siliques sessile.

5. *Hesperis verna. Early-flowering Rocket.*

Lin. spec. 928. Reich. 270. Allion. pedem. n.

984.

Leucoium minus rotundifolium, flore purpureo. Barrel.

ic. 876.

L. maritimum latifolium. Baub. pin. 201. Mor. hist.

2. 241. f. 3. t. 8. f. 5. Raii hist. 781.

L. maritimum alterum latif. purpureo-violaceum. Lob.

ic. 333.—latifolium. Ger. 375. emac. 460. f. 3.

Park. theat. 623. f. 2.

Rapistrum floribus leucii marini. Baub. pin. 95.

prodr. 37.

Stem upright, branched, leaves cordate, stem-clasping, serrate, villose.

[6. *Hesperis lacera.*

Lin. syst. 599. Reich. 270.]

Cheiranthus lacerus. Lin. spec. 926. Mill. dict. n.

17.

[*Leucoium lusitanicum purpureum, fol. eleganter den-*

tatis. Herm. parad. t. 193.

Leaves runcinate, siliques tricuspidate.

7. *Hesperis laciniata.*

Allion. pedem. n. 985. t. 82. f. 1.

Stem branched, leaves unequally jagged, corolla sulphur-coloured.]

DESCRIPTIONS, &c.

1. The leaves of this fort are much larger than those of the Garden Rocket, and of a paler green; the stalks are closely set with bristly hairs; the flowers grow in loose panicles at the top of the stalk, and appear about the same time with the Garden Rocket.

Native of Austria and Hungary. Much cultivated abroad for the great fragrantcy of the flowers in the evening. The ladies in Germany have pots of it placed in their apartments, whence it obtained the name of Dame's-Violet.

[Cultivated here by Mr. Miller in 1739^a.]

2. The second fort grows naturally in Italy; the Garden Rocket with purple flowers was formerly in greater

^a Hort. kew.

plenty in the English gardens than at present, having been long neglected because the flowers were single, and made but little appearance: however, as they have a very grateful scent, the plant is worthy of a place in every good garden. This rises with an upright stalk a foot and a half high, with spear-shaped leaves which sit close to the stalk, and are slightly indented on their edges, ending in acute points: the flowers are produced in a loose thyrse on the top of the stalks; the petals are roundish and indented at the points, of a deep purple colour, and smell very sweet, especially in the evening or in cloudy weather. It flowers in June, and the seeds ripen the latter end of August.

[Mr. Miller is of opinion that the Garden Rocket with white flowers is different from that which bears purple ones, because] the leaves are not so long, but much broader, and the borders entire; the flowers not quite so large, nor forming so good spikes, nor having so fine a scent. [It is however generally agreed that they are not specifically distinct. There are double flowers in the gardens of both colours; and having a mixture of both. Mr. Ray observed the wild single sort flowering in the month of June, in the meadows between Salerno and Naples.—This has been known to our gardens much longer than the other, for Gerarde in 1597 speaks of it as being then sown in gardens for the beauty of the flowers. And Johnson adds (1633) that by the industry of some of our florists, within these two or three years hath been brought unto our knowledge a very beautiful kind of these Dame Violets, having very fair double white flowers.—The names in Gerarde are *Damask Violets*, *Winter Gillofloures*, *Rogues Gillofloure*, and *Clofer Sciences*.—Parkinson adds *Queen's Gilloflowers*.

β. The habit of the *Siberian Rocket* is so much the same in all its parts with the common Garden Rocket, that it may fairly be looked upon as a variety. It differs however in having a stalk of twice the height; the corolla is purple, not white, and the claws of the petals are twice as long as the calyx; the border is blunt, and scarcely, if at all, emarginate; it has however the same little prominent point which that has. The leaves are longer, narrower, and more serrate. But Siberia produces many plants which are larger than the same species in Europe^b.]

Mr. Miller says, it has a strong branching stalk between two and three feet high, and very hairy: oblong heart-shaped leaves, ending in acute points, sitting close to the stalk, four inches long, and an inch and half broad at their base; the upper part of the stalk divides into two or three branches, with small leaves of the same shape with the others, and terminated by loose panicles of large, single, purple flowers, very fragrant.

It flowered at the end of June 1757.

3. [*Scentless Rocket* resembles the foregoing species so much, as scarcely to be distinguished except by a skilful botanist. The leaves however are almost hastate with the base transverse; they are finely toothed, especially at the base, softer, and not so scabrous. The calyx is not coloured. The petals are blunt, without any point. The stamens are not prominent beyond the tube of the flower^c.]

It rises with an upright stalk near two feet high. Leaves dark green, sessile. The flowers grow in loose spikes on the top of the stalks; in some they are white, in others purple, and sometimes both colours striped in the same flower; these having no odour, are not so deserving of a place in gardens.

From this sort, the double white and purple Rockets have been accidentally obtained, which are much esteemed for the beauty of their flowers; and if they had the agreeable odour of the Garden Rocket, they would be some of the best furniture for the borders of the flower-garden, but they are without scent; however, for the beauty of their flowers, they are by some greatly esteemed.

4. [The stem, leaves, and pods of this plant are rough with three-barbed hairs. The flowers are flesh-coloured, with narrow, sub lanceolate, bluntish, petals.

The pods are sessile, stiff, round, somewhat flattened, blunt with a sharp point^d.]

It is an annual plant, with a very branching stalk, about nine inches high; terminated by loose panicles of small purple flowers, which appear in June and July, and are succeeded by long pods sitting close to the stalks, and filled with small seeds, which ripen in September. It is a native of Africa.

5. This also is an annual plant, sending out several heart-shaped leaves from the root, which spread on the ground. The stalk rises nine inches high, branching towards the top, with leaves of the same shape, but embracing. The flowers are produced in loose panicles at the ends of the branches, they are of a lively purple colour, and those plants which rise in the autumn, flower early in the spring. It is a native of the South of France.

[Cultivated in 1739, by Mr. Miller^e.

6. Leaves naked, narrow. Calyxes hairy. Flowers of a dull colour, and unpleasant smell. Pods knotty and three-cusped^f.]

It is a low annual plant, with pointed leaves, having the borders indented as if torn. The corolla is purple. It is a native of Portugal, [and the South of France: and occurs twice, under this name, and that of *Cheiranthus laceris*.

7. Root biennial. The whole plant villose with short hairs. Stalks round. Leaves sessile, lanceolate, deeply and unequally toothed, soft, and subcinereous green. Calyx cylindric, converging, green, a little gibbous at the base, the leaflets linear, acute, concave. Corolla spread out flat, claws scarcely the length of the calyx, border linear, ovate at the end and spreading wider, not acute, slightly emarginate, without scent, greenish towards the claws underneath. Anthers sulphur-coloured, hastate, two-furrowed. Pods flattened. The peduncles are shorter than the calyx and upright; the flowers at first form an umbel, but afterwards a raceme. The root-leaves are on a short petiole, scarcely equal to half the length of the leaf, convex underneath and flat above. These leaves are firmer than those on the stem, succulent, ovate, obscurely and rather angularly toothed.

Native of Piedmont, about *la Briga* and *Sospello*, on rocks exposed to the sun^g.]

PROPAGATION AND CULTURE.

1. This is propagated by seeds in the same manner with the Garden Rocket. It is not quite so hardy, and very subject to rot in winter, especially in a moist soil, or in rich land; it should be planted therefore in a dry poor soil, and a warm situation. If some plants be set in pots, and placed under a common frame in winter, it will be a sure way to preserve them.

2. This being biennial young plants should be raised every year to supply the place of those which decay: if the seeds are permitted to scatter, the plants will come up without trouble in the spring; and if the seeds are sown, the best season for it is in the autumn; because those which are sown in the spring often fail if the season proves dry, or will remain a long time in the ground before they vegetate. This plant should have a loamy undunged soil, in which it will thrive better than in rich land.

There is a variety of this with double flowers, in some of the gardens in France; but that which we have in England, is a variety of the third sort with unfavourable flowers.

3. Being naturally biennial, the plants with single flowers rarely survive the second year; nor will those with double flowers continue much longer; so that unless young plants are annually raised to supply the place of the old ones, there will soon be a want of them, which is what few persons are careful enough to observe; but thinking the roots to be perennial, trust to their putting out offsets, or the plants remaining after they have flowered; and finding them decay, are apt to think their soil very improper for them, and are at a loss to account for their decaying; whereas, when the plants have flowered, they have finished their period, and seldom continue to flower a second time

^b Lin. spec.

^c Ibid.

^d Linn. spec.

^e Hort. kew.

^f Linn. syst.

^g Allioni.

from the same root; though in poor land, they will often put out a few weak offsets, which may flower again, but seldom so strong as the principal root; therefore those who are desirous to propagate these plants, should do it in the following manner:

There should be some strong roots of each sort kept apart for this purpose, which are not intended to flower; when these have shot up their flower-stalks about six inches high, they should be cut close to the bottom; each of these may be divided in the middle to make two cuttings, which should be planted in a soft, gentle, loamy soil, to an east exposure, where they may have only the morning sun; and these may be planted pretty near together, so as to be covered with hand or bell-glasses, which should be put over them after the cuttings have been well watered, and closely shut down, drawing the earth round the rim of the glasses to exclude the air; then the glasses should be shaded with mats every day when the sun is hot; and if the cuttings are gently refreshed with water once in seven or eight days it will be sufficient, for too much moisture will cause them to rot: when these are watered, the glasses should be closely shut down again as before; with this management the cuttings will put out roots in five or six weeks, and will begin to shoot above; then the glasses should be gently raised on one side to admit the air to them, and so gradually harden them to the open air, to prevent their drawing up weak. When these have made good roots, they should be carefully removed, and planted in an east border at about eight or nine inches asunder, observing to shade and water them till they have taken new root; after which they will require no other care, but to keep them clean from weeds till the autumn, when they may be transplanted into the borders of the pleasure-garden, where they are designed to flower.

The roots which are thus cut down, will send up more stalks than before; and when these are of a proper height, they may be cut off and treated in the same way; so that if the roots are sound, there may be two or three crops of these cuttings taken from them, and by so doing, the old roots may be continued much longer than if they are permitted to flower; and by this management, there may be always a supply of good plants for the flower-garden.

These plants are very subject to canker and rot when they are planted in a light rich soil, but in poor strong ground, I have seen them thrive and flower in the utmost perfection, where the stems of flowers have been as large, and the flowers as fair as the finest double Stock-gilliflowers. Their season of flowering is in the beginning of June, and young plants may be raised from the stalks after the flowers have decayed, by cutting them in lengths, and planting them in the manner before directed; but these seldom make so good plants as the young cuttings, nor are they so certain to grow.

4. This is rarely cultivated, except in botanic gardens. If the seeds are permitted to scatter, the plants will come up without care, and only require to be kept clean from weeds; or they may be sown in spring or autumn, where they are to stand, for they do not bear transplanting well.

5. If the seeds are sown in the autumn, they succeed much better than in the spring.

6. If the seeds are sown in the spring upon sheltered borders, where the plants are to remain, and they are thinned and kept clean from weeds, the plants will flower in July, and produce ripe seeds in autumn.

[HESPERIS. See *Cheiranthus*, *Erysimum*, *Sisymbrium*.]

HEUCHERA. (From Jo. Henr. de Heucher, Archiater and Professor of Medicine at Witteberg, author of *Hortus Wittebergensis*, which he described in 1711 and 1713.)

Lin. gen. n. 320. Reich. 349. Schreb. 447. Gært. t. 36. Juss. 308.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Succulentæ*. *Saxifragæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-cleft, rounded, narrow: clefts obtuse.

COR. Petals five, inserted into the edge of the calyx, oval-linear, the length of the calyx.

STAM. Filaments five, subulate, upright. Anthers roundish.

Pist. Germ roundish, half-five-cleft, ending in two, straight styles, the length of the stamens; (permanent, subulate-setaceous, long, diverging, G.): Stigmas blunt.

PER. Capsule ovate, acuminate; half-five-cleft, two-beaked, two-celled, the beaks bent back, (inferior, closely barked by the calyx, opening by a hole within the styles, G.)

SEEDS many, small.

ESSENTIAL CHARACTER.

Petals five. Caps. two-beaked, two-celled.

SPECIES.

1. *Heuchera americana*. *American Heuchera* or *Sanicle*.
Lin. spec. 328. Juss. 266. Reich. 1. 634. hort. cliff.
82. Gron. virg. 29. Murr. in nov. com. gott.
3. 66. Gært. fruct. 177.

Cortusa americana, flore squalide purpureo. Herm.
par. t. 131. Pluk. alm. t. 58. f. 3. Raii hist. 3:
509.

Scapes almost naked, thyrses elongated, root-leaves seven-lobed, on long petioles, doubly and sharply crenate.

[2. *Heuchera dichotoma*.

Lin. Juss. 266. Murr. in com. gott. 1772. p. 64.
t. 1.

Stem branched, peduncles two-flowered axillary, leaves linear-lanceolate opposite entire on the stem.]

DESCRIPTIONS, &c.

1. Root perennial, sending out many cordate-ovate leaves, four or five-lobed, of a lucid green, and smooth, from among these come out the scapes, a foot high, dividing at top into a loose panicle, sustaining many small hairy flowers, of an obsolete purple colour. It is a native of Virginia; flowers in May, and the seeds ripen in August.

[Gærtner remarks, that the capsule may be regarded as of the circumscised kind; for if it be slightly pressed with the fingers, the horns, together with the partition and lid fall off, leaving the upper margin smooth and quite entire.

It appears by the supplemental volume to Ray's history, that it flowered in the English gardens before 1704.

2. This is a species which recedes a little in point of the appearance of the flower from the characters of the genus; yet not so much so as justify the institution of a new genus for it. The whole plant is hairy: the stem at first prostrate, then obliquely ascending; roundish, about a palm and half long, with many scattering branches towards the base; dichotomous above: the leaves are linear-lanceolate, entire, sharp, pubescent, especially at the base, opposite, somewhat stem-clasping, an inch and half long, very spreading. Peduncle emerging laterally from the bosom of the divarications of the branches, erect, long, dilated at the base; two-flowered; with two small pedicels, of which one is longer than the other. Calyx one-leaved, hairy, pentagonal, five-parted; the incisures very sharp; corolla pentapetalous, yellow; petals erect, ovate. Stamens five, half the length of the corolla; anthers ovate: pistils two; germ single, ovate: crowned with the divisions of the calyx. Styles two, subulate, divaricated. Stigmas somewhat cornered. Pericarp a two-beaked capsule, ovate and two-celled. Seeds many, minute.—Native place uncertain^a.]

PROPAGATION AND CULTURE.

It is propagated by parting the roots in autumn, and should be planted in a shady situation. There is little beauty in this plant, but being hardy enough to thrive in the open air in England, it is preserved in some gardens for the sake of variety.

[HEVEA. See *Siphonia*.]

HIBISCUS. (ἱβίσκος of Dioscorides. Derivation unknown.)

Lin. gen. n. 846. Reich. 911. Schreb. 1139.

Cavanill. diff. 3. 143. Gært. t. 134. Juss. 273.

Ketmia. Tournef. 26.

Solandra. Murr. & Juss.

Class. 16. 6. Monadelphia Polyandria.

Nat. order of *Columniferae*.—*Malvaceæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth double. Outer many-leaved, permanent; leaflets linear: more rarely one-leaved, many-cleft.

^a Murr.

Inner

Inner one-leafed, cup-shaped, half-five-cleft, permanent; or five-toothed, deciduous.

COR. Petals five, roundish-oblong, narrower at the base, spreading, fastened at bottom to the tube of the stamens.

STAM. Filaments very many, united at bottom into a tube, at top (in the apex and surface of this) divided and loose. Anthers kidney-form.

PIST. Germ. roundish. Style filiform, longer than the stamens, five-cleft at top. Stigmas headed.

PER. Capsule five-celled, five-valved: partitions contrary, doubled.

SEEDS. solitary or several, ovate-kidney-form.

OBS. Ketmia T. has the capsule ovate, and several seeds.

H. pentacarpos has the capsule globular, and the seeds solitary.

H. populneus has the capsule globular, berried and closed; the outer calyx three-leaved and caducous; the inner obscurely five-toothed, and permanent.

H. tiliaceus has the outer calyx one-leafed, crenate.

H. trionum has the inner calyx inflated.

H. micranthus, rigidus, hirtus, phoeniceus have the seeds woolly on all sides.

H. fyriacus has seeds woolly in the circumference. The capsule in some is ovate, in others long; the outer calyx is from three to twelve-leaved.

H. Solandra has no outer calyx.

ESSENTIAL CHARACTER.

Cal. double: outer many-leaved. Caps. five-celled, with many seeds.

SPECIES.

1. Hibiscus Moscheutos.

Lin. spec. 975. Reich. 3. 357. hort. upf. 205. cliff. 349. Gron. virg. 102.

H. populneus. Mill. dict. n. 17.

Althæa rosea peregrina, forte Rosa moscheutos Plinii. Corn. canad. 144. t. 145. Mor. hist. 2. 532. f. 5. t. 19. f. 6. Raii hist. 602. Park. theat. 303. n. 3. 304. f. 2. n. 3.

Leaves ovate acuminate serrate, stem very simple, petioles floriferous.

2. Hibiscus palustris. Marsh Hibiscus.

Lin. spec. 976. Reich. 357.

Althæa palustris. Bauh. pin. 316.—Cytini flore. Park. theat. 305. f. 1. n. 7.

A. hortensis f. peregrina. Dod. pempt. 655.

A. Sida. Bauh. hist. 2. 957. f. 1. Raii hist. 1066. 1. Stem herbaceous very simple, leaves ovate slightly three-lobed tomentose underneath, flowers axillary.

[3. Hibiscus micranthus. Minute-flowered Hibiscus.

Lin. syst. 628. suppl. 308.

Leaves roundish entire serrate, corollas reflex oblique.

4. Hibiscus microphyllus. Minute-leaved Hibiscus.

Vahl symb. 1. 50. Forsk. descr. 126.

Leaves oval rough-haired serrate in front, stem shrubby.

5. Hibiscus urens.

Lin. syst. 628. suppl. 309.

Tomentose; leaves kidney-shaped crenate, calyxes woolly.

6. Hibiscus præmorsus. Round-leaved Shrubby Hibiscus.

Lin. syst. 628. suppl. 309. Jacqu. ic. collect. 1. 81. Ait. hort. kew. 2. 454.

Pavonia cuneifolia. Cavan. diff. 3. 139. t. 45. f. 1.

Urena præmorsa. L'Herit. stirp. nov. 2. t. 51.

Leaves roundish tooth-serrate retuse pubescent.

7. Hibiscus cordifolius. Heart-leaved Hibiscus.

Lin. syst. 629. suppl. 309.

Arboreous, tomentose, leaves cordate ovate serrate, flowers peduncled terminating, calyx many-leaved linear long.

8. Hibiscus rigidus.

Lin. syst. 629. suppl. 310.

Suffruticose, hirsute, branches simple, leaves oblong serrate, limb of the corolla reflex, seeds woolly.

9. Hibiscus fororius.

Lin. syst. 629. suppl. 311.

Leaves cordate crenate scabrous, outer calyxes round dilated at the end.

10. Hibiscus cancellatus.

Lin. syst. 629. suppl. 311.

Stem weak rough with hairs, leaves cordate serrate, ca-

lyxes globular, having twenty subulate rays rough with hairs.]

11. Hibiscus populneus. Poplar-leaved Hibiscus.

Lin. spec. 976. syst. 629. Reich. 3. 358. fl. zeyl. n. 258. Loureiro cochinch. 418.

H. bacciferus. Forst. fl. austr. n. 260.

Alcea malabarica Abutili folio, fl. majore, ex albo flavescente. Raii hist. 1069.

Novella litorea. Rumph. amb. 2. 224. t. 74.

Bupariti. Rheed. mal. 1. 51. t. 29.

Leaves cordate quite entire, stem arboreous.

12. Hibiscus tiliaceus. Lime-tree leaved Hibiscus.

Lin. spec. 976. syst. 629. Reich. 358. fl. zeyl. n. 259.

Gertn. fruct. 2. 251. Loureiro cochinch. 418.

Forst. escul. 73. Burm. zeyl. 136. ind. 150.

(Ketmia). Rumph. amb. 2. 218. t. 73. Rheed. mal. 1. 53. t. 30.

Alcea malab., Abut. fol., fl. minore ex albo-flavescente, exterius subaspero. Raii hist. 1070.

Leaves cordate roundish undivided acuminate crenate, stem arboreous, outer calyx ten-toothed.

[13. Hibiscus simplex.

Lin. spec. 977. Reich. 359.

Leaves cordate three-lobed repand quite entire, stem arboreous entirely simple.

14. Hibiscus ovalifolius.

Vahl symb. 1. 50. Forsk. descr. 124.

Leaves oval and subangular, outer calyxes five-leaved.]

15. Hibiscus Rosa sinensis. China Rose Hibiscus.

Lin. spec. 977. syst. 629. Reich. 359. fl. zeyl. n. 260.

Cavan. monadelph. diff. 3. 158. t. 69. f. 2. Loureiro

cochinch. 419. Smith spicil. t. 8. Curtis magaz.

t. 158. Breyn. cent. 121. t. 56. Raii hist. 1068.

n. 11. (Alcea). Rumph. amb. 4. 24. t. 8. Rheed.

mal. 2. 25. t. 17.

H. javanica. Mill. dict. n. 7.

Leaves ovate acuminate serrate, stem arboreous.

[16. Hibiscus brasiliensis. Brazilian Hibiscus.

Lin. spec. 977. Reich. 359. Plum. ic. 160. f. 1?

Leaves cordate toothletted, outer calyx double the length of the other, stem shrubby, branches rough with hairs.

17. Hibiscus hirtus. Hairy Hibiscus.

Lin. spec. 977. Reich. 359. Pluk. alm. t. 254. f. 3.

(Alcea).

Leaves lanceolate-ovate acuminate serrate, branches scabrous, stem herbaceous.

18. Hibiscus phoeniceus.

Lin. syst. 629. suppl. 310. Jacqu. hort. 3. 11. t. 14.

Leaves ovate acuminate serrate, peduncles jointed thickened above the joints, lobes longer, calyxes naked, seed woolly.]

19. Hibiscus mutabilis. Changeable Rose Hibiscus.

Lin. spec. 977. Reich. 3. 360. hort. upf. 205. cliff.

349. Loureiro cochinch. 419. Brown. jam. 286.

n. 7. Rumph. amb. 4. 27. t. 9. Rheed. mal. 6. 69.

t. 38—41.

H. sinensis. Mill. dict. n. 2.

Althæa arborea Rosa sinensis. Mor. hist. 2. 530. f. 5. t. 18. f. 2.

Rosa sinensis. Ferr. flor. 493. t. 497. Merian, sur. t. 31.

Malva rosea arborea indica. Park. theat. 301. 8. f. 300. 8. Raii hist. 1069.

Leaves cordate-five-angled obscurely serrate, stem arboreous.

[20. Hibiscus spinifex. Prickly-fruited Hibiscus.

Lin. spec. 978. syst. 629. Reich. 361. Jacqu. amer.

196. hort. 2. 46. t. 103. piest. 96. t. 185. Plum.

spec. 2. ic. 1. (Abutilon).

Leaves cordate crenate undivided, capsules set with spines standing out.

21. Hibiscus Solandra. Maple-leaved Hibiscus.

L'Herit. stirp. nov. 5. 103. t. 49. Ait. hort. kew. 2.

455.

Solandra lobata. Murr. in comm. gott. 6. (1784) p. 20. t. 1. Syst. veget. 623.

Triguera acerrifolia. Cavan. diff. 1. 41. t. 11. Leaves subcordate three-cusped serrate, calyxes uncalyced.]

22. Hibiscus fyriacus. Syrian shrubby Hibiscus, or Althæa Frutex.

Lin. spec. 978. Reich. 361. hort. cliff. 350. upf. 205.

Curtis magaz. t. 83. Loureiro cochinch. 420.

Ketmia

- Ketmia syriaca. Scop. carn. n. 863.
 Alcea arborefcens. Cam. hort. t. 3, 4.—syriaca. Baub. pin. 316.—glabra, Ketmia dicta. Baub. hist. 2. 957. f. 2. Raii hist. 1066.
 Althæa frutex. Park. parad. t. 367. f. 5.—arborefcens. Ger. emac. t. 933. f. 3. Park. theat. t. 305. f. 2. Leaves wedge-form-ovate, gash-ferrate towards the end, stem arboreous.
 23. Hibiscus ficulneus. Fig-leaved Hibiscus. Lin. spec. 978. syst. 630. Reich. 361. hort. cliff. 498. Fl. zeyl. n. 263. Forsk. ægypt. cent. 4. 125.
 Ketmia zeylanica fici folio, perianthio oblongo integro. Dill. elth. 190. t. 157. f. 190. Burm. zeyl. 137. Leaves palmate-five-cleft, stem prickly, flowers peduncled.
 [24. Hibiscus speciosus. Smooth Hibiscus. Ait. hort. kew. 2. 456. Scop. insubr. 3. 35. t. 17? Leaves palmate smooth, segments lancéolate ferrate; stem, peduncles and calyxes even.]
 25. Hibiscus Sabdariffa. Various-leaved Hibiscus. Lin. spec. 978. syst. 630. Reich. 361. hort. cliff. 350. fl. zeyl. n. 262. Jacqu. obs. 2. 10. t. 35. Swartz obs. 269. Brown. jam. 285. 5. Pluk. alm. t. 6. f. 2. (Alcea).
 Althæa indica, gossypii folio, acetosæ sapore. Herm. lugdb. 25. Raii hist. 1900.
 β. Alcea indica magno flore. Baub. pin. 317. A. americana. Clus. hist. 2. 26. Sabdariffa. Ger. herb. 791. f. 2. emac. 936. f. 2. Park. theat. 302. f. 4. parad. 368. 5. t. 367. f. 3. Raii hist. 1067. Leaves ferrate, the lower ovate undivided, the upper seven-parted, stem unarmed, flowers sessile.
 26. Hibiscus cannabinus. Hemp-leaved Hibiscus. Lin. spec. 979. syst. 630. Reich. 362. Comm. hort. 1. 35. t. 18. (Alcea). Ebret, pict. t. 6. f. 1. (Ketmia). Joan. Miller ic. t. 43.
 H. vitifolius. Mill. dict. n. 8.
 Ketmia indica, cannabinis foliis, Bangué dicta. Burm. zeyl. 135. ind. 152. Leaves ferrate, the upper palmate five-parted, having one gland underneath, stem prickly, flowers sessile.
 27. Hibiscus furattensis. Prickly-stalked Hibiscus. Lin. spec. 979. syst. 630. Reich. 363. mant. 436. Burm. ind. 152. zeyl. 135. 2. (Ketmia). Rumph. amb. 4. 46. t. 16. Loureiro cochinch. 420.
 β. Lin. zeyl. n. 264. Pluk. alm. t. 5. f. 4. (Alcea). Rheed. mal. 6. 75. t. 44. Raii hist. 1901. (Alcea). Prickly with prickles curved back, leaves five-lobed, outer calyxes appendicled, stipules half cordate, flowers peduncled.
 [28. Hibiscus pedunculatus. Lin. syst. 630. suppl. 309. Hirsute; leaves five-lobed toothed, peduncles axillary one-flowered elongated.]
 29. Hibiscus Manihot. Palmated-leaved Hibiscus. Lin. spec. 980. Reich. 3. 363. hort. cliff. 350. upf. 206. Sabb. hort. 1. t. 56. Burm. ind. 152. Dill. elth. 189. t. 156. f. 189. (Ketmia). Pluk. amalth. t. 355. f. 2. (Alcea). Leaves palmate-digitate seven-parted, stem and petioles unarmed.
 30. Hibiscus Abelmoschus. Target-leaved Hibiscus. Lin. spec. 980. Reich. 363. hort. cliff. 349. upf. 206. fl. zeyl. n. 261. mat. med. 167. Burm. ind. 153. zeyl. 134. 2. Brown. jam. 285. n. 4. Marcgr. bras. t. 45. (Alcea). Merian surin. t. 42. Rumph. amb. 4. 38. t. 15. Rheed. mal. 2. 71. t. 38.
 Alcea ægyptiaca villosa. Baub. pin. 317. Raii hist. 1066.
 Althæa ægypt. villosa. Mor. hist. 2. 533. f. 5. t. 18. f. 9. Leaves subpeltate cordate seven-angled ferrate, stem hispid.
 31. Hibiscus esculentus. Eatable Hibiscus. Lin. spec. 980. syst. 630. Reich. 634. Jacqu. obs. 2. 11. t. 35. Burm. ind. 153. Comm. hort. 1. 37. t. 19. Raii suppl. 518. Sloan. jam. 1. 223. t. 133. f. 3. Brown. jam. 285. n. 3. (Alcea). Loureiro cochinch. 421.
 H. ficifolius. Mill. dict. n. 15. R. Okra. Kalm. itin. 2. 209. Quingambo. Marcgr. bras. 31.

- Leaves five-parted pedate, inner calyxes bursting at the side.
 [32. Hibiscus clypeatus. Lin. spec. 980. Reich. 364. Swartz obs. 270. Sloan. jam. 1. 216. t. 135. f. 1. (Malva.) Plum. spec. 3. t. 160. f. 2. (Ketmia). Leaves cordate angular, capsules turbinate truncate hispid.
 33. Hibiscus vitifolius. Vine-leaved Hibiscus. Lin. spec. 980. syst. 630. Reich. 364. mant. 569. 980. fl. zeyl. n. 265. Gært. fruct. 2. 250. Herm. lugdb. 26. t. 28. (Althæa). Rheed. mal. 6. 79. t. 46. Raii hist. 1880. (Abutilo). Leaves five-angled sharp ferrate, stem unarmed, flowers drooping.
 34. Hibiscus zeilanicus. Lin. spec. 981. syst. 630. Reich. 365. mant. 436. fl. zeyl. n. 266. Burm. ind. 153. t. 48. f. 2. Seba mus. 2. t. 18. f. 3. (Ketmia). Pluk. alm. t. 125. f. 3. Leaves cordate-bastate, peduncles alternate one-flowered jointed.
 35. Hibiscus virginicus. Lin. spec. 981. syst. 631. Reich. 366. Gron. virg. 102. Pluk. phyt. t. 6. f. 4. (Alcea). Lower leaves cordate acuminate ferrate, upper bastate.]
 36. Hibiscus pentacarpos. Lin. spec. 981. Reich. 366. hort. cliff. 350. Micheli flor. 54. Tozzetti itin. 2. 309. Zannich. venet. 155. t. 91. Lower leaves cordate angular, upper subbastate; flowers nodding a little, pistil drooping.
 [37. Hibiscus hastatus. Lin. syst. 631. suppl. 310. Hoary; leaves oblong simple, three-lobed at the base, quite entire; raceme terminating.
 38. Hibiscus fraternus. Lin. syst. 631. suppl. 311. Merian surin. t. 37. Leaves three-lobed, outer calyxes with round rays, mucronate and concave at the tip.
 39. Hibiscus æthiopicus. Dwarf wedge-leaved Hibiscus. Lin. syst. 631. Reich. 366. mant. 258. Pluk. alm. t. 254. f. 2. (Alcea). Leaves subcuneate slightly three-toothed, the upper ones opposite; flowers terminating.]
 40. Hibiscus Trionum. Bladder Hibiscus. Lin. spec. 981. syst. 631. Reich. 367. hort. upf. 206. Sabb. hort. 1. t. 55. Curtis magaz. t. 209. Gært. fruct. 2. 250.
 Ketmia Trionum. Scop. carn. n. 862. Trionum. Lin. hort. cliff. 349.
 Alcea vesicaria. Baub. pin. 317. Cam. epit. 806. Best. exst. æst. vi. t. 2. f. 1.—f. Veneta. Park. theat. 302. f. 2. Raii hist. 1067.—peregrina f. vesicaria. Park. parad. 368. 3.—veneta. t. 367. f. 2.—peregrina. Ger. 791. f. 1. emac. 936. f. 1.—peregrina foliifera. Lob. ic. 650.
 β. H. africanus. Narrow-leaved African Bladder Hib. Mill. dict. n. 20. Alcea vesicaria capitis b. spei. Mor. prelud. 227. hist. 2. 533. Ketmia vesic. africana. Tournef. inst. 101.
 γ. H. hispidus. Broad-leaved African Bladder Hibiscus. Mill. dict. n. 21. Leaves three-parted gashed, calyxes inflated.
 [41. Hibiscus elatus. Swartz prodr. 102. Brown. jam. 284. 1. Sloan. jam. 1. 215. t. 134. f. 1, 2, 3. Leaves cordate roundish entire, peduncles very short one-flowered, calyx ten-toothed.
 42. Hibiscus clandestinus. Cavan. hisp. 1. t. 2. Stem virgate rough with hairs shrubby, leaves ovate sharp somewhat three-lobed, flowers minute closed.]
 43. Hibiscus tomentosus. Mill. dict. n. 5. Sloan. cat. jam. 95. (Malva). Leaves heart-shaped angular-ferrate tomentose, stem arboreous.
 44. Hibiscus cordifolius. Mill. dict. n. 13. Ketmia americana frutescens foliis subrotundis crenatis hirsutis, flore luteo. Houst.

Leaves heart-shaped hirsute crenate, flowers lateral, stem arboreous branched.

45. *Hibiscus bahamensis*.

Mill. dict. n. 14.

Leaves oblong-cordate smooth toothblotted hoary underneath, with very large flowers.

DESCRIPTIONS, &c.

[Much the greater part of the numerous species in this genus are perennials. Many of them have shrubby stalks, but some are only herbaceous. The leaves are alternate, and commonly of a soft texture: in some of the species they are glandulous beneath, especially on the midrib. The flowers are of the Mallow kind, axillary and terminating. The bark in several is capable of being drawn into threads and manufactured for pack-thread and ropes: and the capsule in some is eatable: others are much esteemed for their ornamental flowers.]

1. Root perennial. Stalk single, two feet high or more. Flowers large, purple.

[It is remarkable in this species, that the flower springs from the petiole of the leaf, as in *Turnera ulmifolia*.^a

The native place of growth is in Virginia and Canada. Cornutus affirms, and from him Ray and Morison, that it came from the woods of Africa; and we are informed by the latter, that it was introduced into the Royal (now no longer Royal) garden at Paris, in 1644.

2. *Marsh Hibiscus* has the habit of the foregoing. The root is perennial. The stems are a foot and half in height, unbranched and annual. The leaves are broad ovate, bluntly ferrate, three-nerved, acuminate^b, bright green on their upper side^c, but tomentose on their under. The peduncles come singly from the axils of the upper leaves; they are longer than the petiole, but do not spring from it, support but one flower, and are jointed. The flower is very large^d, and of a bright purple colour^e.—Native of Virginia and Canada, in moist ground^f. It flowers here in July and August: and was cultivated by Mr. Miller in 1759^g.

3. Root annual. Stem round, upright, simple, a foot in height. Leaves alternate, petioled, without any angles. Flowers minute, on the summit of the stem. Seeds lanuginous.—Native of the East Indies, where it was found by Koenig^h.

4. This is a shrub, with the younger branches, leaves and calyxes rough with stellate hairs. Leaves roundish, ferrate from the middle, veinless, five-nerved, more hairy underneath. Petioles longer than the leaves. Stipules minute, bristle-shaped. Peduncles axillary, solitary, the length of the leaves, jointed towards the top, thicker. Outer calyx ten-leaved, with bristle-shaped leaflets: inner five-leaved, with lanceolate leaflets, shorter than the outerⁱ.

5. This has the size and appearance of *Alcea rosea*. The herb is tomentose, slightly stinging. Stem herbaceous. Leaves rounded, scarcely lobed, unequally crenate, underneath more tomentose and paler. Peduncles usually longer than the leaf. Flowers axillary, two or three together, subsessile, glomerate. Outer calyx a little shorter than the inner, consisting of ten linear, villous leaflets; the inner angular, thick, villous within and without. Corolla small in proportion to the calyx, purple. Filaments narrow: anthers yellow. Found at the Cape of Good Hope, by Bach^k.

6. This is a beautiful shrub. The leaves are as it were truncate in the middle, crenulate, five-nerved, and soft. The flowers are small and yellow. The capsules small, five together, tubercled with a point. It differs from *H. æthiopicus* (n. 39), in the calyx not being hispid^l.

Native of the Cape of Good Hope. Gathered there by Mr. Fr. Masson, and introduced into the royal garden at Kew in 1774. It flowers from June to August^m.

7. The figure of the leaves in this is the same as in *H. populneus*, without any angles. The calyx as in *H. Malvaviscus* (*Achania*), but much longer, and having a greater number of leaflets. The flowers rank among

the middle-sized ones.—Native of South America, where it was observed by Mutisⁿ.

8. The twigs long, filiform, quite simple, stiff. The leaves small and petioled. The stipules erect, bristle-shaped, stiff. The peduncles axillary, one-flowered.—Found by Koenig, in grassy spots of the island of Ceylon^o.

9. Stem herbaceous or suffruticose, columnar, hairy all over, supported by trees. Leaves alternate, petioled, cordate without angles, remote. Stipules awl-shaped, minute. Peduncles axillary, the length of the leaves, solitary, pubescent, one-flowered. Calyx hirsute: the outer consisting of ten, distant rays, shorter than the inner calyx, spreading at the end into a cordate, obtuse, cowed leaf: the inner bell-shaped, larger, angular, five-cleft; the clefts ovate. The corolla, stamens, and pistils as in *H. Manihot*. Capsule smooth, hairy, shorter than the calyx. Seeds smooth.—Found at Surinam, by Dahlberg^p.

10. Stem herbaceous, filiform, prostrate, hairy; as is likewise the whole plant. Leaves alternate, petioled, sagittate-cordate, toothed. Peduncles axillary, one-flowered; longer than the petioles. Outer calyx inflated: inner small, five-cleft. Stigmas ten. Capsule half-five-grained; with five cells. Seeds very many. This also was found in Surinam by Dahlberg^q.

11. This is a tree, fifteen feet high or more, with a trunk larger than a man can encompass; the wood white and soft; and the bark like that of the Lime-tree: the branches long and spreading. Leaves acuminate, of a soft solid texture, smooth, paler underneath and marked with three strong nerves running from the petiole to the edge; petioles long, round, and slender^r. Peduncles axillary, solitary, one-flowered^s. Outer calyx commonly one-leaved, almost quite entire, altogether undivided^t: but sometimes three-leaved. Corolla large yellowish white, inclining to green, becoming red as it decays; without scent.—Native of the East Indies, in sandy soils, where it produces flowers plentifully the greatest part of the year^u. It has also been found in the South Sea Islands; and was introduced into Kew garden in 1770, by Monf. Richard^x.

This cannot be the *Hibiscus populneus* of Miller, which seems to be the first species or *H. moscheutos*.]

12. This rises with a woody, twisted, pithy stem, from eight or ten [to twelve or fifteen feet in height, smaller than a man may encompass,] dividing into several spreading branches towards the top, which are covered with a brown bark and a woolly down. Leaves alternate, of a lucid green on their upper side, and hoary on their under, full of large veins; [they are broader and rounder than those of the foregoing, of a more solid and thicker texture, and smooth, on petioles of a middling length, underneath like velvet^y. The younger leaves are subtrilobate, with three pores underneath. The stipules are large and rounded^z. The flowers are produced towards the upper part of the twigs from the axils, on peduncles an inch long, branched, and supporting several flowers, forming all together loose spikes. In figure and colour they resemble the foregoing, but they are smaller, and roughish on the outside, nor are they so curled and wrinkled; on the lower part of the neck, instead of the five-leaved rose which there is in that, we have a large, round spot of a dusky red purple colour^a. Both calyxes are one-leaved; the outer cloven half way into ten parts, the clefts alternately larger and smaller; the inner cloven half way into five parts, the clefts equal and the length of the capsule. Capsule ovate, pointed at the top, silky, ten-celled; opening spontaneously in ten parts when ripe: cells closed on every side, fissile at the central angle; and five seeds in each^b.

Gartner agrees with Adanson in the propriety of making a distinct genus of this species, under the name of *Pariti*. Thus there would be no end of dividing every large genus.

Native of the East Indies; and almost every where

^a Linn. spec.

^b Ibid.

^c Miller dict.

^d Linn. spec.

^e Miller dict.

^f Linn. spec.

^g Hort. kew.

^h Linn. suppl.

ⁱ Vahl.

^k Linn. suppl.

^l Ibid.

^m Linn. suppl.

ⁿ Ibid.

^o Ibid.

^p Ibid.

^q Ray hist.

^r Linn. zeyl.

^s Linn. spec.

^t Ray hist.

^u Hort. kew. 454.

^x Hort. malab. Ray hist.

^y Linn. syst.

^z Hort. malab. Ray hist.

^a Gartner.

within the Tropics.—Cultivated by Mr. Miller in 1739^c.

In the island of Otaheite they make matting of the bark, as fine as our coarse cloth. Also ropes and lines, from the size of an inch to that of a small pack-thread: and fishing nets^d.

In the island of Otaheite; as Forster informs us, they also suck this bark for food, when the bread fruit fails them: and in New Caledonia the inhabitants frequently subsist on it, though it is an insipid food, affording very little nourishment.

13. Stem undivided, straight, thickish. Leaves bluntish, smooth with an unequal margin, having a honied pore on the nerves underneath^e.—Linneus informs us that his plant was three years old, and that he had not seen the flowers. He assigns Asia for its native place, and yet refers to Sloane. Swartz is of opinion that this is a doubtful plant. See *H. elatus*. (n. 41.)

14. The stellate hairs are placed on minute tubercles, towards the tops of the branches they are more crowded, below they are scattered. The leaves underneath are more hairy, they are acute at both ends, and the uppermost are somewhat angular. Stipules bristle-shaped. The leaflets of the outer calyx are lanceolate, nerved, terminated by a bristle shorter than the leaflet: the segments of the inner are ovate-acuminate. The flowers have the size and appearance of those in *H. vitifolius*. The cells of the capsule are many-seeded, and therefore it is not an *Urena*. The seeds are villose^f.

15. The *China Rose* grows in India to the size of an ordinary tree: with us it is shrubby, the stem round, erect, with alternate, spreading branches, that are wand-like, leafy, brownish green and nearly smooth. Leaves alternate, spreading, unequally and coarsely serrate, entire at the base, five-nerved, bright green, very smooth, except the young ones, which are slightly downy; their petioles are round, downy on the upper side. Stipules in pairs, opposite, at the base of the petioles, linear, acute, deciduous. Flowers axillary, solitary, peduncled, large, of a deep scarlet colour. Peduncles twice as long as the petioles, round, straight; thicker towards the top, with a joint beyond the middle. Calyx smooth: the outer generally in six linear acute segments, spreading; the inner longer, bell-shaped, divided half way down into four or five segments, angular, ribbed. Petals three times as long as the inner calyx, obovate, bluntish, waved, furnished with several ribs, paler on the outside, yellow at the base. Stamens and Pistils longer than the corolla, bent downwards, red except the anthers which are yellow. Tube of the Filaments cylindric, with five notches at the top. Germ ovate, smooth. Stigmas five, divaricate, blunt, silky, blood-red. The Fruit is hitherto unknown.

It is extremely common in the gardens of China and the East Indies; but its native country is unknown. Loureiro however affirms that it is spontaneous as well as cultivated both in China and Cochinchina; and that it is so common in the latter, that they have entire hedges of it to their gardens. It has been long known from its appearance on Chinese screens and paper hangings. The variety with double flowers is most frequently cultivated both in the East and in European hot-houses: it is indeed rarely seen with single ones^g.

Rumphius informs us that it varies with white flowers: but this is not esteemed; for the inhabitants of India are extremely partial to whatever is red, which they consider as a colour tending to exhilarate.

Loureiro remarks, that the double-flowered white variety is more difficult to cultivate, and differs a little from the others in having gash-serrate leaves, approaching in form to those of *H. syriacus*. He also mentions another variety with large, double, brick-coloured flowers. But in so favourite a plant we should not be surprized if there were many more varieties.

They make these handsome flowers into garlands and festoons on all occasions of festivity, and even in their

sepulchral rites. They are put to a use which seems little consistent with their elegance and beauty; that of blacking shoes, whence their names of *Rosa calceolaria*, and *Shoe-flower*^h. The women also employ them to colour their hair and eyebrows black.

Mr. Miller cultivated it so long since as the year 1731ⁱ: but he informs us that he had never had it with single flowers. It is even now rarely seen with such in our stoves. With double ones it is common, thrives well, and is in blow during the greatest part of the summer. The single flowers are of very short duration; but this defect is compensated by their curious and beautiful structure^k.

16. Brazilian Hibiscus is a small shrub, with the stem, branches, petioles, peduncles, and calyxes all rough with hairs. Stipules awl-shaped. Peduncles one-flowered, longer than the leaves. Outer calyx eight-leaved, linear, spreading. Capsule pentacoccous, not longer than the inner calyx. It has the appearance of *H. mutabilis*: and is a native of Brasil^l.

17. This is a small plant. The stalk, but especially the peduncles, as also the leaves and calyxes, are rough with stiffish hairs. Leaves broad lanceolate, finely serrate. Corolla purple. Capsules roundish. Seeds woolly.—Native of the East Indies^m.

Supposed, but without reason, to be a variety of *H. phoeniceus*ⁿ.

18. This is a very beautiful shrub; a native of Ceylon. It blows in our stoves the whole summer, and is very ornamental with its deep red flowers^o. It is set down in Linneus's system (edit. 12.) and Supplement, as a variety of the foregoing, arising from culture; but it seems to be a distinct species.

19. Stem pale, single, smooth, spreading out wide into leafy branches at top; the wood resembling that of the Fig. Leaves the same size with those of the Vine, having the roughness of Fig leaves, and the form of both, or rather of the angular leaves of Ivy; whitish underneath. Petioles rough, thick, three or four inches in length. Peduncles thicker towards the top, sometimes tinged with red, sustaining large handsome flowers^p. These alter in their colour, for at their first opening they are white, then they change to a blush rose-colour, and as they decay they turn to a purple. In the West Indies all their alterations happen the same day, but in England where the flowers last near a week in beauty, the changes are not so sudden. It is a native of the East Indies (and Japan). The French first carried the seeds to their settlements in the West Indies; and the inhabitants of the British colonies there, being supplied with the seeds from them, have given it the name of Martinico Rose. It varies with double flowers, from which the single is frequently produced; but the seeds of the single seldom vary to the double.

[It is much cultivated in the gardens of China and Cochinchina.

The time of its blowing in our stoves is november and december. It was introduced here in 1690, by Mr. Bentick^q.

20. Outer calyx five-cleft. The capsule has one spine at the end, and two on the sides, approximating to the opposite one, so that five only appear in the circumference^r.

Native of the West Indies. Introduced in 1778, by William Wright, M. D. It flowers here in July^s.

21. Maple-leaved Hibiscus has the air of *Nepaea*. The root is annual. The stalk upright, branched on every side, round, hollow, villose, herbaceous, a foot and half in height; the branches alternate, spreading, round, hirsute. Leaves alternate, usually three-lobed, generally entire at the base, the nerves prominent on both sides; they are villose, scabrous, bright green, little or nothing paler underneath, spreading, three or four inches in length and breadth. The lower ones are scarcely three-cusped; the upper ones of the branches sinuate-three-lobed, or sometimes but seldom five-lobed. Petioles spreading, round, hirsute, in the

^c Hort. kew.

^d Hawkf. voy. 2. 217.

^e Linn. spec.

^f Vahl.

^g Smith spicil.

^h Rumph. and Curtis mag.

ⁱ Hort. kew.

^k Curtis mag.

^l Linn. spec.

^m Ibid.

ⁿ Retz. obs. 5. 5.

^o Linn. suppl.

^p Ray hist.

^q Hort. kew.

^r Linn. syst.

^s Hort. kew.

older leaves the same length with the leaf. *Stipules* linear, sharp, villose, spreading very much, but scarcely reflex. *Racemes* terminating, upright, villose, two inches long. *Flowers* alternate, stiff, four or five lines wide. *Peduncles* upright, round, villose, jointed at the tip, becoming twice or thrice longer when in fruit. *Bractes* two, like the stipules, at the side of each peduncle. *Perianth* single, one-leafed, half-five-cleft or five-parted, villose; segments narrow lanceolate, sharp, spreading a little, three or four lines in length and breadth. Petals white, blunt, spreading a little, united at the base, inserted into the receptacle, longer than the calyx. *Filaments* shorter than the corolla. *Anthers* pel-tate, one-celled, whitish. *Germ* ovate, acuminate, marked with lines. *Stigmas* large, pubescent, white, cernuous. *Capsule* fixed to the calyx which is pressed close to it, oblong, acuminate, torulose, villose; from six to eight lines in length, and three or four in breadth. *Seeds* very many, angular, brown, fastened both to the edges of the partitions and the central receptacle, which is a five-cornered column, awl-shaped at the top.

Murray has constituted a new genus of this, under the name of *Solandra*; but it agrees in the pericarp and all other respects with *Hibiscus*, except in the want of an outer calyx, which is not sufficient alone to warrant us in separating this from the other species.

It is a native of Bourbon: where it was found by Commerçon. It was cultivated in the Paris garden before 1775¹; and was introduced here in 1786, by Mr. Zier. It flowers in july and august².

22. This rises with a shrubby stalk to the height of six or seven feet, sending out many woody branches, covered with a smooth, gray bark; the leaves have the upper part frequently divided into three lobes, are placed alternately on the branches, and stand on short foot-stalks. The flowers come out from the wings of the stalk at every joint of the same year's shoot; they are large, and shaped like those of the Mallow, having five large roundish petals, which join at their base, spreading open at the top in the shape of an open bell: these appear in august, and if the season is not too warm, there will be a succession of flowers part of september; the early flowers are succeeded by short capsules; but unless the season proves warm, they will not ripen in this country.

It is commonly called *Althæa frutex* by the nursery gardeners, who propagate the shrubs for sale; there are four or five varieties, which differ in the colour of their flowers; the most common has pale purple flowers with dark bottoms; another has bright purple flowers with black bottoms; a third, white flowers with purple bottoms; a fourth, variegated flowers with dark bottoms; and a fifth pale yellow flowers with dark bottoms; but the last is very rare at present in the English gardens; there are also two with variegated leaves, which are by some much esteemed. [To these we may add another, introduced since the time of Miller, with double flowers.—It is a native of Syria, and is cultivated in Japan very much for hedges, and in Cochinchina, &c.]

The *Althæa frutex* was cultivated in England in 1629, as we learn from Parkinson³, and was probably then a new shrub; for he sets it down as tender, and to be kept in a large pot or tub, in the house or in a warm cellar.]

23. This is a native of Ceylon. It rises with an herbaceous, upright, prickly stalk, from two to three feet high, dividing into small branches at top. The flowers come out singly from the axils; they hang down, are small, and white with purple bottoms, and are succeeded by short obtuse capsules.

[The prickles of the stem are placed on red warts, and are frequently bent back, which is not the case in *H. Sabdariffa*⁴.

The leaves resemble those of the Fig-tree, but are smaller; they are rough, somewhat paler underneath, and have a few hairs; the lower ones are broader and commonly divided into five segments; the upper ones narrower and usually three-lobed. Calyx oblong en-

tire, divided only at the tip into small jags resembling threads, so that when the corolla expands the calyx generally bursts on one side. The flowers open only when the sun shines, and that but for a few hours; in the morning, or about noon, they nod or hang down, and the petals spread irregularly, as in some *Geraniums*. The calyxes, seed-vessels, &c. have a fine down on them⁵.

It flowers from june to august. The seeds were sent from J. Ph. Breynius of Dantzick, to Mr. Miller and Dr. Sherard, and was cultivated by them in the botanic gardens at Chelsea and Eltham.

24. Perennial. Very nearly allied to *H. lavis*, described by Scopoli, in his *Flora Insularia*, only the leaves are all five-lobed in this, whereas in Scopoli's plant they are only three-lobed.—It is a native of South Carolina, and was cultivated in 1778, by Dr. Fothergill. It flowers in september⁶.

25. Root annual, single, descending. Stalk herbaceous, from one to three feet high, upright, subdivided, round, smooth, of a blood-red colour. Leaves alternate, broad-ovate, acuminate, blunt at the end, crenate, nerved, smooth on both sides, the upper ones three or five-parted, upright. Petioles the length of the leaves, spreading, round, smooth, coloured. Flowers axillary, solitary, largish; on very short, round, thick peduncles. Outer calyx has ten linear, awl-shaped, upright leaflets, of a dark purple colour: inner cup-shaped, the clefts broad-lanceolate, sharp, pale with three purple lines, ciliate at the edge. Petals connate at the base, obcordate, larger on one side, veined, of a very pale sulphur colour with a dark blood-red bottom. Capsule closed by the calyx, ovate. Seeds angular, black. Sometimes the leaves are entirely undivided.—The petioles in cultivation are without prickles; probably in their native growth they may be prickly⁷; as described in *Lin. syst.*

In the West Indies it is called *Red Sorrel*. The calyxes and capsules freed from the seeds make very agreeable tarts; and a decoction of them sweetened and fermented is commonly called there *Sorrel cool drink*. It is a small diluting liquor, much used in our sugar-colonies, and reckoned very refreshing in those sultry climates⁸.

It is a native of India, and is cultivated in gardens both in the East and West Indies. Among us it has been long known; being among the plants of Gerard's garden in 1596. It flowers from june to september⁹. Gerard laments, that having with great industry nourished up some plants from the seed, and kept them unto the midst of may, one cold night destroyed them all. He and Parkinson call it *Thorny Mallow*. Ray mentions it as one of the plants which he had seen in the garden of Compton Bishop of London at Fulham.

Mr. Miller makes two species of this, under the names of *Sabdariffa* and *gossypifolius*, n. 9. & 10.

26. Root annual. Stalk five feet high or more, with a few upright prickles scattered about it. Branches few, simple. Petioles spreading, the length of the leaves, having straight prickles scattered over their backs. The lower leaves are undivided and ovate; the middle ones three-lobed; the uppermost divided almost to the footstalk into five lanceolate segments, these have no prickles, but the midrib has a gland at the base underneath. Outer calyx awl-shaped, upright, prickly; inner hispid, with a gland on each leaflet. Flowers axillary; the corolla large, of a pale sulphur colour, with a dark purple bottom. [Capsule roundish, hairy or prickly, covered with the calyx.—It agrees with *H. Sabdariffa* in structure, appearance, serratures, and the gland under the leaves¹⁰. According to Miller, this is a taller plant, and the flowers are larger.

It was cultivated by Mr. Miller in 1759; and is a native of the East Indies.]

The bark of this and the foregoing species is full of strong fibres, which the inhabitants of the Malabar coast prepare and make into cordage; and it seems as if it might be wrought into fine strong thread of any size.

¹ L'Heritier.

² Hort. kew.

³ Parad. 369. n. 7.

⁴ Linn. syst.

⁵ Dillen. elth.

⁶ Hort. kew.

⁷ Swartz obs.

⁸ Browne jam.

⁹ Hort. kew.

¹⁰ Linn. spec. and syst.

27. *Stem* round, upright, stiff, two feet high, spotted with purple towards the top. *Petioles* horizontal, round, the length of the leaves: both they and the stem have hairs scattered over them, and abundance of crooked prickles underneath. *Leaves* spreading, palmate, half-five-cleft: clefts lanceolate, serrate, sprinkled with little bristles arising from a dot, and having little crooked prickles on the ribs underneath. *Stipules* kidney-shaped, stem-clasping, smooth and even, ciliate. *Peduncles* prickly, rough with hairs at the tip. *Corolla* yellow, with a dark purple base. *Calyx* as it were radiate^e.

Loureiro's description is somewhat different, and supplies several particulars not in Linneus's. It is a *shrub* six feet in height, climbing, and branched: the stem, leaves, petioles, calyx, and peduncles are all prickly. *Leaves* some three-lobed, others five-lobed, serrate, scattered, on long petioles. *Flower* lateral, solitary, middle-sized, on a long peduncle: *corolla* saffron-coloured within, and very red on the outside. Both *calyxes* permanent: *outer* wheel-shaped, ten-leaved; leaflets ovate-oblong, pedicelled: *inner* five-cleft; the clefts sharp, converging, keeled at the back and on the edge. *Corolla* bell-shaped, petals blunt, slightly cohering at the base. *Tube of the filaments* longer than the calyx: *anthers* oblong, curved inwards. *Germ* conical, five-cornered. *Styles* reflex, equal to the stamens. *Capsule* a broad cone, without prickles, silky; inclosed by the inner converging calyx; and containing many angular scabrous seeds^f.

Native of the East Indies, and Cochinchina. It is an annual, and flowers with us in July. Cultivated in 1768, by Mr. Miller^g: who says that the seeds were sent him by Dr. Jussieu from Paris.

The leaves are gratefully acid, and are eaten. In cataplasms they assist in dissolving hard tumours, &c. for which purpose the root is esteemed to be more efficacious^f.

28. This was found at the Cape of Good Hope by Thunberg^h.]

29. This sort rises with an herbaceous smooth stalk three or four feet high, with leaves which are divided into seven segments almost to the bottom; the middle segment being four inches long and half an inch broad, the upper lateral segments about three inches long and the same breadth; these are indented at their extremities, but the lower segments are not much more than an inch long, and have foot-stalks four inches long. The flowers are produced from the wings of the stalks toward the top, standing on short peduncles; they are composed of five large sulphur-coloured petals, which, when open, spread five inches wide; they have a dark purple bottom; and are succeeded by large, pyramidal, five-cornered, erect seed-vessels, which are filled with pretty large seeds, having little smell or taste.

[In Japan they use the mucilage of the root for giving consistence to paper, as Thunberg informs us.

Native of China and Japan. It was cultivated in the Chelsea garden in 1712; and flowers in Augustⁱ.]

30. This sort grows naturally in the East Indies; the Society Isles; and also in the West Indies, where it is commonly known by the title of Musk; the French cultivate these plants in their American islands, the seeds of which are annually sent to France in great quantities, so that they certainly have some way of rendering it useful, as it seems to be a considerable branch of trade. This rises with an herbaceous stalk about three or four feet high, sending out two or three side branches, garnished with large leaves cut into six or seven angles, which are acute; they stand on long foot-stalks, and are placed alternately. The stalks and leaves of this are very hairy. The flowers come out from the wings of the stalk upon pretty long peduncles, which stand erect; they are large, of a sulphur colour, with dark purple bottoms, and are succeeded by pyramidal five-corned capsules, filled with large seeds of a very musky odour.

[A few of these seeds are sufficient to perfume a

whole room. They may undoubtedly be used in scenting powders and pomatums, instead of the animal Musk, which is a scarce and dear commodity^k: and are accordingly put to that use abundantly at Paris. In Arabia and Egypt they grind these seeds, and mix the powder with their coffee, to render it more agreeable to the head and stomach.

The official names are *Abelmoschus*, from the Arabic Ab-El-Mosch, which signifies grain or seed of Musk; and *Bamia moschata*. These seeds seem to have a claim, as a medicine, to the cordial and nervine virtues experienced from most other substances of that class^l.

This species was cultivated among us by John Tradescant, jun. in 1656^m.]

31. This rises with a soft herbaceous stalk from three to five feet high, dividing at top into many branches. The flowers are axillary, of a pale sulphur colour with dark purple bottoms, small and of very short duration, opening in the morning with the rising sun, but fading long before noon in warm weather. Capsules of different forms in different varieties: in some not thicker than a man's finger, and five or six inches long; in others very thick, and not more than two or three inches long; in some erect, in others rather inclined.

[The stem, according to Loureiro; is somewhat shrubby, six feet high, round, unequal, nearly upright: branches herbaceous, diffused, reclining, hispid. Leaves crenate, tomentose, on long hispid, scattered petioles. Flower solitary. Outer calyx eight-leaved: inner oblong, spathaceous, four-toothed at the tip. Capsule oblong, with five sharp corners.—In *Syst. veg.* the outer calyx is said to be twelve-parted, and to fall with the corolla, except the base which continues. The inner is five-toothed. The remarkable circumstance of its bursting on the side is mentioned by both authors.]

This sort is common in the West Indies, where the inhabitants cultivate it for the capsules, which they gather green to put into their soups and pepper-pots.

[They are generally boiled separately, and added just before these messes are taken off the fire: but the seeds may be boiled in broth, like barley or any other ingredient, for they are not so mucilaginous. The pods, boiled and buttered, make a rich plate: but they are used only in private families in this form. They are full of a nutritive mucilage. It is known in Jamaica by the name of the *Okro* plantⁿ. In China and Cochinchina it is cultivated in gardens, for the beauty and colour of the flower, though it is void of scentⁿ. With us it has been known since the year 1692, when it grew in the royal garden at Hampton-court. Here it is annual, and flowers in June and July^o.

32. This is a shrub the height of a man and upwards. *Stem* upright, branched, round, pubescent. *Branches* subdivided, stiff, upright, tomentose. *Leaves* alternate, acuminate, toothletted, nerved, hirsute and somewhat scabrous, soft-tomentose underneath. *Petioles* longer, stiff, round, tomentose. *Peduncles* from the terminating axils, upright, thicker than the petioles, stiff, long, round, white-tomentose, one-flowered. *Corollas* pale, sometimes dusky yellow^p. *Calyx*—outer ten-cleft at the base; leaflets reflex, hirsute: inner unequal, thick, five-parted; the three hinder parts upright, broad-ovate, acuminate, nerved, wrinkled, rough with hairs. *Petals* unequal; the three hinder ones more erect, the two front ones bent down, united at the base, broad-lanceolate, blunt, thick, tomentose on the outside. *Filaments* united above the middle. *Anthers* oblong, small, fulvous. *Germ* hirsute, ovate, depressed. *Stigmas* red. *Capsule* large, roundish, furrowed, extremely hirsute, with ten blunt angles. *Seeds* roundish, large, whitish.

It grows, but rarely, in the island of Jamaica, in coppices near the coast. Its common name there is *Congo Mahoe*; the negroes affirming that it came ori-

^k Browne jam. who calls it *Musk Okro*.

^l Lewis's mat. med. *Bamia*. ^m Hort. kew.

ⁿ Loureiro.

^o Hort. kew.

^p Yellowish carnation colour, *Sloane*.

^e Linn. spec.

^f Loureiro cochinch.

^g Hort. kew.

^h Linn. suppl.

ⁱ Hort. kew.

ginally from Africa¹. Sir Hans Sloane says it grows on the Red hills, very plentifully.

33. This is an annual plant. *Stem* upright, round, a foot and half in height, nearly the thickness of a finger, green, somewhat tomentose, rough with a few minute dagger-points. *Leaves* like *Malva sylvestris*, cordate, bluntly ferrate, veined, green on both sides, spreading. *Petioles* round, spreading, the length of the leaf. *Stipules* bristle-shaped, short, hairy, spreading a little. *Peduncles* axillary, solitary, one-flowered, leafless, the length of the leaves, drooping before the flowers open. *Calyx*—outer of eight awl-shaped, spreading leaves. *Corolla* large, yellow with a dark purple base. *Stamens* and *pistil* purple. *Stigmas* dark purple. *Capsule* with five blunt angles, very much flattened, rounded at the tip and sides².

Gärtner describes the capsule as being of the substance of paper, rufescent, subvillose, flattened a little; the five angles compressed and winged; gaping at the wings. *Seeds* about four in each of the five cells, kidney-shaped, powdered with very small raised dots, and of a dirty ferruginous colour. Embryo curved, yellowish.—Native of the East Indies.

34. This also is an annual plant. *Stem* herbaceous, upright, round, rough with hairs: branches alternate, the lower ones longest. *Leaves* alternate, remote, deeply trifid, gash-crenate, blunt, gummous-arenaceous underneath. *Petioles* spreading, longer than the leaves, flatter above. *Stipules* awl-shaped, spreading. *Peduncles* solitary, axillary (at the side of the branchlet), extended sideways, having a bent joint below the flower. Outer calyx as it were inflated in proportion to the capsule, ovate as in *Atractylis cancellata*. *Corolla* flesh-coloured, the size of *Potentilla anserina*. It differs from the other sorts in the outer calyx; the flatness of the corolla; and in having the five outer stamens frequently distinct. The capsule is pentacoccus, parting by joints as in *Malva*³. In *Fl. zeyl.* it is said to have the size and appearance of *Verbascum Blattaria*: with a twelve-leaved outer calyx; the leaflets linear and hispid.—Native of the island of Ceylon.

35. Stem green, upright. Stem-leaves cordate-oblong, finally hastate, somewhat tomentose, three-nerved, very finely ferrate. Peduncles one-flowered, solitary, axillary, forming something of a naked raceme at top⁴. It is very nearly related to the next species, and perhaps only a variety⁵.—Native of Virginia, in salt marshes.

36. Root perennial. Stem three feet high, narrow. Stem-leaves cordate-oblong, upper ones hastate, slightly three-nerved, tomentose underneath, very finely ferrate. Peduncles axillary, on the top of the plant solitary, naked, longer than the petiole, one-flowered. Outer calyx spreading, with awl-shaped rays, scarcely the length of the inner. Corolla spreading, pale red, nodding a little. The whole of the stamens yellow; the anthers of a fuller colour. Style with the stamens drooping, white. Stigmas flesh-coloured⁶.—It grows near Venice, in marshy places: and was found by Lerche near Afracan. Cultivated by Mr. Miller in 1759.

Linneus doubts whether this be really different from the foregoing, though it differs from it a little in the fruit. He suspects that it may owe its origin to that species⁷.

37. The whole of this is hoary with a white pubescence. Leaves petioled, elongate, broad-linear, some with appendicled lobes at the base, others exactly three-lobed, larger, smooth. Stipules oblong, quite entire, blunt, large, caducous. Raceme elongate, few-flowered. Bractes in pairs, stipule-shaped, oblique, at the exit of the pedicels. Calyxes simply cleft, without spines or appendicle. Capsule globular, smooth and even, hoary⁸.—Native of the Society Isles.

38. Stem herbaceous, smooth and even, as is the whole plant. Leaves petioled, deeply trifid; clefts ferrate, lanceolate, the middle one largest; the midrib underneath has a glandular pore. Inner calyx five-parted, angular, twice as long as the other; the parts

ovate-oblong, upright, edged, stiff. Corolla yellow. Capsule subglobular, pubescent, short.—Native of Surinam⁹.

Swartz suspects it to be the same with *Hib. Sabdariffa*.

39. This is a small shrub. Leaves alternate, except the uppermost, which are opposite, on very short petioles, oblong, blunt, three-toothed at the end (sometimes, but seldom five-toothed,) even with very few hairs above, but hispid underneath. Stipules acrosc, scarcely longer than the petioles. Flowers peduncled, solitary: the peduncle shorter than the leaf. Outer calyx eight or ten-leaved, linear-lanceolate, hispid. Petals obovate, the size of the Strawberry flower, longer than the stamens.—Native of the Cape of Good Hope, where it was observed by Koenig¹⁰. It was introduced into the royal garden at Kew in 1774, by Mr. Francis Maffon: and flowers here in august¹¹.]

40. It rises with a branching stalk a foot and a half high, having many short spines which are soft, usually the leaves are divided into three lobes, which are deeply jagged almost to the midrib; these jags are opposite, and the segments are obtuse: the flowers come out at the joints of the stalks upon pretty long peduncles; the outer calyx is composed of ten long narrow leaves, which join at their base; the inner is of one thin leaf, swollen like a bladder, cut into five acute segments at the top, having several longitudinal purple ribs, and is hairy; both these are permanent, and inclose the capsule after the flower is past. The flower is composed of five obtuse petals, which spread open at the top, and form an open bell-shaped flower; these have dark purple bottoms, but are of a pale sulphur colour above [tinged sometimes partially with pale purple on the outside, where they are also ribbed. The leaves vary in their division, the lower ones being sometimes almost entire, and the uppermost next the flower most deeply cut, almost to the midrib, and the lobes most jagged; the two side lobes of these are sometimes so deeply cut, that it may be said to be a subquincelobate leaf. At the base of each peduncle is a pair of long linear bractes. The corolla becomes wholly purple after it has folded up again.

The capsule is ovate, the consistence of paper, pustuled with protuberances occasioned by the seeds, villose, black. The partitions inserted into the middle of the valves. Receptacle none; the seeds fixed in a double row to the central edge of the partitions: there are from eight to twelve in each cell, kidney-shaped a little compressed, blackish-brown sprinkled with very small callous dots of a cinereous ferruginous colour¹². According to Scopoli there are only five seeds in each cell. The outer calyx is eight-cleft and tubercled. The corolla on a peduncle longer than the leaf; with ovate acute bractes. Some of the leaves are five-lobed; and the petioles are semicolumnar.]

This is an annual plant, growing naturally in some parts of Italy and Austria. It has been long known in the English gardens by the title of *Venice Mallow*. Gerarde, (who cultivated it in 1596) and Parkinson, call it also *Mallow* or *flower of an hour*, [and *Good night at noon*, or *Good night at nine*: for Gerarde affirms that it opens about eight of the clock, and shuts up again at nine.—On the 16th of august 1796, the day being dry and fine, the thermometer at 66°, the barometer nearly at 30°, sunshine and clouds alternately, with a cool gentle breeze at N. E. The plants in a southern exposure, but open, in the border of a shrubbery, the flowers began to open soon after eight o'clock in the morning, and were not finally closed till after four. Being observed every day to the 6th of september, they continued opening usually at nine or soon after, if the weather was fair. The 31st of august being wet, they did not open all day. The 5th of september being very cloudy, they did not open till half after ten, and were never quite expanded all day. They closed from four to half after five, according to the weather; and the afternoon of sept. 5th, being very fine, they did not close till half after six.] The flowers certainly are of

¹ Swartz obs.

² Linn. mant.

³ Linn. spec.

⁴ Linn. syst.

⁵ Linn. suppl.

⁶ Linn. suppl.

⁷ Linn. mant.

⁸ Gärtner.

⁹ Hort. kew.

short duration, and in hot weather continue but few hours open: however there is a succession of them daily for a considerable time, in june, july, and august.

β. This resembles the former, but the stalks grow more erect, are of a purplish colour, and very hairy; the leaves are composed of three lobes, which are divided almost to the foot-stalk; these are narrow, the middle lobe stretching out more than twice the length of the two side lobes, and they are but slightly indented on their edges, whereas those of the former are cut almost to the midrib; the flowers are larger, and their colour deeper.

[Linneus adds that the stalk is more simple as well as more upright; that the uppermost leaves are five-lobed; and that the peduncles are longer than the petioles. He fancies it to be a daughter of *Hibiscus Trionum* by *Malva capensis*.^b]

γ. This also has at first sight some resemblance of the others; but it rises with strong hairy branching stalks, with much broader leaves than either of the former, the lower being divided into three, and the upper into five obtuse lobes, which are crenated on their edges; the flowers are large, but of a paler colour than those.

[Both these are natives of the Cape of Good Hope: and were cultivated by Mr. Miller, the latter in 1758.

41. This is a tree growing to a considerable size. The wood is of a dark olive colour; the bark pretty smooth; the trunk tall and straight. The flowers are large and open, not unlike those of the yellow Lily, either in size or appearance.

It is reckoned excellent timber. All the tender parts of the tree abound with a delicate mucilage, which may be used instead of the more common medicines of this tribe^c. The bark is made into ropes of all sorts^d.

Native of Jamaica, where it is called *Mabot* or Mahoe-tree.

42. *Stems* round, branched, scabrous, three feet high; covered with little, sharp, divaricating bristles, growing by threes. *Leaves* alternate, ciliate, somewhat scabrous, longer than the petioles. *Stipules* awl-shaped. *Flowers* very small, axillary, solitary. *Peduncles* longer than the leaf, upright, jointed and thicker towards the tip. *Calyx* outer of six little bristles, scarcely half a line in length: inner a little longer, half-five-parted, hairy. *Corolla* whitish, villose, scarcely larger than the calyx: becoming violet-coloured as it withers: petals ovate, never expanding. Tube of the stamens very short, not visible without a glass, covered with ovate yellow anthers. *Capsule* globular, the size of a pea, smooth, with five whitish furrows. *Seeds* blackish, with a very white wool drawn over them.—In the fruit, peduncles, and general air it approaches to *H. hirtus* and *phoeniceus*; but among other circumstances differs from them in the flowers being extremely small, and never opening.—Native of Senegal^e.

43, 44, 45. There are three species in Miller from the West Indies: which I give as I find them, not knowing whether they are distinct from those which are already set down or not.]

43. Stem woody, seven or eight feet high, sending out many side branches towards the top covered with a whitish bark. Leaves about four inches long, and three broad towards their base, ending in acute points, and having several longitudinal veins. Flowers axillary on long peduncles. Petals roundish, yellow turning red as they decay. Capsules large, obtuse, five-cornered, hairy.—Native of the West Indies.

44. This sort was discovered by the late Dr. Houstoun in the island of Cuba, from whence he sent me the seeds. This rises with a woody stalk twelve or fourteen feet high, sending out many lateral branches; the flowers come out single from the wings of the leaves; they are of a very bright yellow colour, but not large, and are succeeded by short capsules ending in acute points.

45. This has a perennial root but an annual stalk.

^b Linn. syst.

^c Brown. jam.

^d Sloane.

^e Cavanilles.

The seeds were sent me from the Bahama islands, and succeeded in the Chelsea garden, where the plants produced plenty of flowers, but did not ripen their seeds. This rises with several stalks from the root, four feet high, with leaves, ending in acute points, of a light green on their upper side, but hoary on their under; and slightly indented on their edges, standing upon long foot-stalks; the flowers are produced at the top of the stalks; they are very large, and of a light purple colour with dark bottoms, and are succeeded by short capsules.

PROPAGATION AND CULTURE.

[The greater part of this genus of *Hibiscus* are natives either of the East or West Indies, and must be treated accordingly.

The first, second, twenty-second, thirty-fifth, thirty-sixth, and fortieth are hardy enough to bear the open air in England. But of these, the first, second, and thirty-fifth] seldom flower in the open air here, unless the summer proves very warm, though the roots will live, if they are planted in a sheltered situation.

The only way to have these plants flower in this country, is to keep the roots in pots, and to shelter them under a frame in winter, and in the spring plunge them into a gentle hot-bed, which will cause them to put out their stalks early; and when the stalks are so high as to reach the glasses, the pots may be removed into a glass-case; where, if they are duly supplied with water, and have plenty of air in hot weather, they will flower very well in july, and in warm seasons will ripen their seeds.

22. *Syrian Hibiscus*, commonly called *Althæa Frutex*, is propagated by seeds, which should be sown in pots filled with light earth the latter end of march; and if they are plunged into a gentle heat, it will greatly forward the growth of the seeds. When the plants are come up, they must be inured to the open air, and in may the pots may be plunged into the ground, in a border exposed to the east, where they may have the morning sun: the reason of my advising the pots to be plunged into the ground, is to prevent the earth from drying so fast as it would do when the pots stand on the surface, so that the plants will not require so much water in summer: these plants will require no other culture, but to keep them clean from weeds, and in very dry weather to refresh them with water during the first summer, but in autumn it will be proper to remove the pots under a common frame to screen them from the frost; or where there is not such conveniency, they may be plunged close to a hedge, pale, or wall, to a good aspect; and in severe frost, they should be covered with mats, straw, or other light covering; for although these plants, when they have obtained strength, will resist the cold of our winters, yet the young plants, whose shoots are tender, are very often injured by the first frost of autumn: so that if they are not screened the first year, they are often killed to the ground. Toward the latter end of march will be a good time to transplant these plants, at which time a spot of light ground must be prepared to receive them, which should be divided into beds four feet broad, with paths of two feet broad between; then the plants should be shaken out of the pots with the earth about them, and separated with care, for their roots are very tender, and apt to break with little force; these should be planted at about nine inches asunder in the beds; so that if four rows are planted in each bed, there will be six inches allowed between the outside rows and the paths. The ground should be gently closed about the roots to prevent the air penetrating to them; and if a little old tanners bark, or mulch, is laid over the surface of the beds, it will prevent the earth from drying, and be of great use to the plants; during the following summer they must be kept clean from weeds, and if the following winter prove severe, it will be prudent to cover the plants again in autumn, especially if they shoot late in the season, or the autumn prove cold and moist, for then the plants will be in great danger of having their tops killed: in these beds the plants may remain two years, by which time they will be fit to transplant where they are designed to remain; for if they are kept

kept longer in the nursery, they will not remove so well. The best time for transplanting these plants is the end of march, or the beginning of april, for they seldom begin to shoot till the end of april, or the beginning of may; they should have a light soil, not too wet, for in strong land their stems grow mossy, and they never thrive after.

These plants may also be propagated by layers; and by cuttings, which, if planted the latter end of march, in pots filled with light earth, and plunged into a gentle heat, will take root; but the plants so raised, are not so good as the seedlings. The several varieties may be increased by grafting upon each other, which is the common method of propagating those with striped leaves.

40. This sort is propagated by seeds, which should be sown where the plants are designed to remain, for they do not bear transplanting well; if the seeds are sown in autumn, the plants coming up early in the spring, will flower in the summer, and those which are sown early in the spring will succeed them; so that by sowing them at three different seasons, they may be continued in succession till the frost stops them. These require no other culture but to keep them clean from weeds, and thin them where they are too close; and if the seeds are permitted to scatter, the plants will come up full as well as when sown, so that it will maintain its situation unless it is weeded out.

[The fifth, sixth, twenty-fourth, twenty-eighth, and thirty-ninth, require the protection of the Greenhouse, Cape-stove, or Glass-case. These being natives of the Cape of Good Hope, except the twenty-eighth, which is from South Carolina.

The rest, being the far greater number, or three-fourths of the whole, must be kept in the bark-stove, where some of them will make a splendid figure; particularly the fifteenth and nineteenth.

The principal mode of propagating these is by seeds,] sown on a good hot-bed in the spring; and the plants afterwards put into pots filled with light earth, and plunged into a fresh hot-bed: treating them afterwards in the same way as the Amaranths. The more tender sorts must be plunged in autumn into the tan-bed, there to remain, and to be treated as other tender plants from the West Indies; giving them but little water in winter.

[Several of the sorts will produce seeds here with care in a good hot-house; for those which will not, we must have recourse to the countries where they grow naturally. Most of them are perennial, and may also be propagated by cuttings; particularly the China Rose, which is the most ornamental of them all.]

12. *H. tiliaceus* will flower the second year, if the plants are brought forward; otherwise not before the third or fourth. It will bear the open air in summer, in a warm situation, but will not make any great progress.

19. The plants of this sort should not be quite exposed to the open air the first season, and the first winter will require the warmth of a moderate stove; but as they get more strength, they may be treated with less care, for they will bear the open air in summer, in a warm sheltered situation, and will live through the winter in a very good green-house, provided they have not too much wet; but the plants thus hardily treated, will not make so great progress, nor flower so well as with a little additional warmth; and if they are too tenderly managed, they will draw up weak, and be less likely to flower. This sort usually flowers in England in november, so that it keeps to the usual time of flowering in its native country.

29. *H. Manihot* will produce flowers and perfect seeds the first season. The plants may be continued through the winter in a moderate warmth, though few persons are at the trouble of preserving the plants after they have ripened their seeds, because the young plants make a better appearance.

30. *H. Abelmofchus* seldom lives more than one year in England, though it is biennial in its native country.

31. *H. esculentus* will live in a warm border, and thrive for a time in a good season, but with the first cold or bad weather the leaves drop off; it seldom

flowers, and never perfects seeds; so that it must be sheltered, at least in bad weather.

36. Though the roots will live in the open ground, yet our summers are not warm enough to bring it to flower. The seeds therefore should be sown in a hot-bed, and when the plants are fit to remove, they should each be planted in a separate small pot, and plunged into a moderate hot-bed, allowing them sufficient air in warm weather. This may stand in the open air in summer, but will seldom flower; to do this it must be kept in a deep frame, where it will continue and flower several years.

[*HIBISCUS MALVAVISCUS*. See *Achania*.

HICKERY. See *Juglans*.

HIERACIOIDES. See *Crepis*.]

HIERACTIUM. (*ἱερακίον*, *Accipitrina*, because Hawks were supposed to sharpen their sight with the juice. Hence also the English name *HAWKWEED*, and the French *Eperuere* or *Herbe à l'Eperuier*.)

Lin. gen. n. 913. *Reich.* 992. *Schreb.* 1238.

Tournef. 267. *Vaill. mem. acad.* 1721. 3, 46, 49,

57, 58, 59, 60. *Gartn. t.* 158. *Juss.* 169.

Pilosella. *Vaill. mem. acad.* 1721. 57.

Class. 19. 1. *Syngenesia Polygamia Æqualis*.

Nat. order of Compositæ Semisiliculosæ. Cichoraceæ, *Juss.*

GENERIC CHARACTER.

CAL. common imbricate, ovate: scales several, linear, very unequal, longitudinal and incumbent.

COR. Compound, imbricate, uniform: corollules hermaphrodite, numerous, equal.

Proper monopetalous, ligulate, linear, truncate, five-toothed.

STAM. Filaments five, capillary, very short. *Anther* cylindrical, tubulous.

PIST. Germ subovate. *Style* filiform, the length of the stamens. *Stigmas* two, bowed back.

PER. none. *Calyx* converging, ovate.

SEEDS solitary, obtusely four-cornered, short. *Down* capillary, sessile.

REC. naked.

OBS. *Hieracium V.* has the stem branched. *Pilosella T.* has a simple scape.

ESSENTIAL CHARACTER.

Cal. imbricate (or calyculate) ovate. *Down* simple, sessile. *Recept.* naked.

SPECIES.

* *With a one-flowered scape.*

[1. *Hieracium incanum*. Hoary Hawkweed.

Lin. syst. 716. *Reich.* 3. 635. *Jacqu. austr.* 3. 47.

t. 287. *Pollich pal. n.* 738. *Clus. hist.* 141.

Baub. hist. 2. 1038.

Apargia incana. *Scop. carn.* 2. n. 982.

Leontodon pyrenaicum. *Gouan illustr.* 55. *t.* 22. *f.* 1, 2.

L. hispidum β. *Lin. spec.* 1124.

Picris n. 25. β. *Hall. helv. De la Chenal, æt. helv.* 8. 133.

Leaves quite entire, somewhat toothblotted, lanceolate, scabrous.

2. *Hieracium pumilum*. Dwarf Hawkweed.

Lin. syst. 716. *Reich.* 3. 636. *mant.* 279. *Jacqu.*

austr. 2. *t.* 189? See n. 48. *Hall. helv. n.* 42.

Leontodon dentatum. *Lin. mant.* 107.

H. prunellæfolium. *Gouan illustr.* 57. *t.* 22. *f.* 3.

Retz. obs. 5. n. 118. *Allion. pedem. n.* 784. *t.* 15.

f. 2. *Villars dauph.* 122.

Crepis pygmæa. *Lin. syst.* 719.

Leaves ovate, petioles dilated, scapes with one or two flowers.

3. *Hieracium alpinum*. Alpine Hawkweed.

Lin. spec. 1124. *Reich.* 3. 636. *fl. lapp. n.* 283.

suec. n. 696. *Huds. angl.* 343. *Wither. arr.*

844. *Lightf. scot.* 434. *t.* 18. *Hall. helv. n.* 49.

Scop. carn. n. 967. *Krock. files. n.* 1274. *Villars*

dauph. 103. *Allion. pedem. n.* 771. *t.* 14. *f.* 2.

Petiv. herb. brit. t. 11. *f.* 2. *Mor. hist. f.* 7. *t.* 7.

f. 5. (*Pilosella*).

H. alp. pumilum, fol. lanuginoso. *Baub. pin.* 129.

H. villosum alp. flore magno singulari. *Raii syn.* 169. *t.* 6. *f.* 2.

H. pu-

- H. pumilum* 2. *Col. ecphr.* 2. 30. *Raii hist.* 241.
Leaves oblong entire toothed, scape almost naked, calyx hairy.
4. *Hieracium Taraxaci*. See *Apargia Taraxaci*.
Lin. spec. 1125. *Reich.* 3. 637. *Retz. obs.* 4. 30.
t. 2. *Wither. arr.* 845. *Lightf. scot.* 435.
- Picris* n. 27. *Hall. helv.*—*taraxaci*. *Allion. pedem.* n. 769. t. 31. f. 1.
- Hedypnois autumnale Taraxaci*. *Huds. angl.* 341. 2. e.
Leaves lanceolate toothed smooth, scape almost naked, calyx hirsute.
5. *Hieracium alpestre*.
Lin. syst. 716. *Jacqu. austr.* 2. t. 191. *Krock. files.* n. 1275.
- Picris saxatilis*. *Allion. pedem.* n. 766. t. 14. f. 4.
Leaves lanceolate toothed smooth, scape with a leaf and a flower or two, calyx hirsute cylindric.
6. *Hieracium venosum*. *Vein-leaved Hawkweed*.
Lin. spec. 1125. *Reich.* 3. 637. *Gron. virg.* 114.
Cold. novæb. 175. 2. *Banist. virg.* 1926.
Leaves wedge-shaped rough with hairs, scape very thick upright.
7. *Hieracium Pilosella*. *Mouse-ear Hawkweed*.
Lin. spec. 1125. *Reich.* 3. 638. *hort. cliff.* 388. *fl. suec.* n. 697. *mat. med.* 179. *Huds. angl.* 343. *Wither. arr.* 845. *Curtis lond.* 4. t. 54. *Lightf. scot.* 436. *Hall. helv.* n. 55. *Pollich pal.* n. 740. *Neck. gallob.* 329. *Gärtn. fruct.* 2. 360. *Krock. files.* n. 1276. *Allion. pedem.* n. 772. *Villars dauph.* 98.
- Pilosella minor*. *Cam. epit.* 709. *Dod. pempt.* 67. *Fuchs. hist.* 605. *Lob. ic.* 1. 479. 1. *Blackw.* t. 365.—*vulgaris repens*. *Park. theat.* 690. f. 1.
- P. repens*. *Ger.* 513. 2. *emac.* 638. 2. *Raii syn.* 170. *hist.* 242. *Petiv. brit.* t. 11. f. 1.
- P. major repens hirsuta*. *Baub. pin.* 262. *Mor. hist.* f. 7. t. 8. f. 1, 3.
- P. majori fl. f. vulgaris repens*. *Baub. hist.* 2. 1039.
Leaves quite entire ovate tomentose underneath, stem throwing out runners.
- * *With a many-flowered scape.*
8. *Hieracium dubium*. *Creeping Hawkweed*.
Lin. spec. 1125. *syst.* 716. *Reich.* 3. 638. *fl. suec.* n. 698. *Huds. angl.* 344. *Wither. arr.* 846. *Hall. helv.* n. 53. *Pollich pal.* n. 741. *Leers herborn.* n. 614. *Krock. files.* n. 1277. *Villars dauph.* 99.
- Pilosella major* 1. *Tabern.* 196.—*repens minus hirsuta*. *Baub. pin.* 262.—*media vulgaris erecta*. *Park. theat.* 689. n. 3. t. 690. f. 2.—*minor fol. angustiore minus piloso, repens*. *Baub. hist.* *Raii hist.* 243.
Leaves entire ovate-oblong, runners creeping.
9. *Hieracium Auricula*. *Narrow-leaved Hawkweed*.
Lin. spec. 1126. *Reich.* 3. 638. *fl. lapp.* n. 282. *suec.* n. 699. *hort. cliff.* 388. *Huds. angl.* 344. *Wither. arr.* 846. *Hall. helv.* n. 52. *Neck. gallob.* 330. *Pollich pal.* n. 742. *Leers herborn.* n. 615. *Krock. files.* n. 1278. *Villars dauph.* 99.
- Pilosella major erecta altera*. *Baub. pin.* 262.
- P. repens minor, caule pedali, polyanthos, fol. angustis oblongis*. *Raii suppl.* 147.
Leaves quite entire lanceolate, runners creeping.
10. *Hieracium cymosum*. *Small-flowered Hawkweed*.
Lin. spec. 1126. *Reich.* 3. 639. *Hall. helv.* n. 51. *Pollich pal.* n. 743. *Leers herborn.* n. 616. *Krock. files.* n. 1279. *Villars dauph.* 101.
- H. murorum angustifolium non sinuatum*. *Baub. pin.* 129. *prodr.* 67. *ic.*—item, *Pilosella montana hispida, parvo flore*. *Baub. pin.* 262.
- Pilos. minori fl. hirsutior & elatior non repens*. *Baub. hist.* 2. 1040.
- P. major macrocaulos umbellifera*. *Column. ecphr.* 1. 249.
Leaves lanceolate entire hairy, scape almost naked hairy at the base, flowers in a kind of umbel.
11. *Hieracium præmorsum*. *Truncate-root Hawkweed*.
Lin. spec. 1126. *Reich.* 3. 639. *fl. suec.* n. 700. *Hall. helv.* n. 51. *Pollich pal.* n. 744. *Gmel. fib.* 2. 32. t. 13. f. 2. *Amm. ruth.* 210. *Krock. files.* n. 1280.
- H. pratense latifolium non sinuatum majus & minus*.
Baub. pin. 129.—item *Pilosella major erect. pin.* 262. *Raii hist.* 241.
- H. latif.*; præmorsa radice, caule singulari pilosellæ majori affine. *Baub. hist.* 2. 1035.
Leaves ovate somewhat toothed, scape branched, upper flowers coming out first.]
12. *Hieracium aurantiacum*. *Orange-flowered Hawkweed*.
Lin. spec. 1126. *Reich.* 3. 640. *hort. cliff.* 388. *upf.* 238. *Hall. helv.* n. 50. *Jacqu. austr.* 5. t. 410. *Krock. files.* n. 1281. *Allion. pedem.* n. 778. t. 14. f. 1. *Villars dauph.* 102.
- H. hortense flor. atro-purpureascentibus*. *Baub. pin.* 128. *prodr.* 65.—item, *alpinum non laciniatum; fl. fusco*. *pin.* 128. *prodr.* 65.—*hort. latifolium; f. Pilosella major*. *Ger. emac.* 305. f. 3.
- H. germanicum* 1. *Col. ecphr.* 2. 28. t. 30.
- Pilosella polyclonos, &c.* *Mor. hist.* 3. 78. f. 7. t. 8. f. 7.
- Auricula muris hispanica, f. H. pannonicum fl. saturate croceo*. *Baub. hist.* *Raii hist.* 243.
Leaves entire; stem almost naked quite simple hairy corymbiferous.
- [13. *Hieracium Gronovii*. *Gronovius's Hawkweed*.
Lin. spec. 1127. *Reich.* 3. 640. *Gron. virg.* 114. & 90, edit. 1. *Pluk. mant.* t. 420. f. 2. *Krock. files.* n. 1282?
Stem panicled almost naked, root-leaves obovate quite entire hairy.
14. *Hieracium Gmelini*. *Gmelin's Hawkweed*.
Lin. spec. 1127. *Reich.* 3. 640. *Gmel. fib.* 2. 23. t. 8. f. 2.
Stem panicled, root-leaves ovate serrate smooth.
15. *Hieracium sanctum*. *Palestine Hawkweed*.
Lin. spec. 1127. *Reich.* 3. 641. *aman.* 4. 328.
Crepis nemaufensis. *Gouan illustr.* 60. *Allion. pedem.* n. 809. t. 74. f. 1.
- H. dentis leonis fol. monoclonon subasperum*. *Baub. pin.* 37.
- H. intybaceum f. sextum*. *Tabern. ic.* 183.
Leaves lyrate blunt toothed.
16. *Hieracium capense*. *Cape Hawkweed*.
Lin. spec. 1127. *Reich.* 3. 641. *amoen.* 6. *afr.* 45.
Lower peduncles higher, leaves oblong toothed scabrous.
- *** *With a leafy stem.*
17. *Hieracium pontanum*.
Lin. syst. 717. *Hall. helv.* n. 38.
- H. montanum*. *Jacqu. austr.* 2. t. 190. *Allion. pedem.* n. 770. *Krock. files.* n. 1286? *Raii suppl.* 142. n. 59. *Bocc. mus.* t. 113.
- Hypochaeris pontana*. *Lin. spec.* 1140. *Reich.* 3. 661. *Vaill. aët.* 1721. p. 215.
- Andryala pontana*. *Villars dauph.* 67. t. 23.
Stem with one or two flowers, leaves lanceolate toothed.
18. *Hieracium paniculatum*. *Panicled Hawkweed*.
Lin. spec. 1127. *Reich.* 3. 641. *Krock. files.* n. 1283?
Stem upright, leaves alternate lanceolate naked toothed, panicle capillary.
19. *Hieracium porrifolium*. *Leek-leaved Hawkweed*.
Lin. spec. 1128. *Reich.* 3. 642. *mant.* 458. *Hall. helv.* n. 48. *Scop. carn.* n. 969. *Jacqu. vind.* 275. t. 6. *austr.* 3. t. 286. *Ger. prov.* 167. 5. *Seguier veron.* 2. 270. n. 6. *Villars dauph.* 115. *Krock. files.* n. 1285.
- H. tragopogonis folio*. *Baub. pin.* 129.—& *murorum angustifolium non sinuatum*, *Baub. pin.* 129. *prodr.* 67. n. 22.
- H. phalangii foliis*. *Vaill. aët.* 1701. p. 184.
- H. montanum asphodeli fol. acuminatis*. *Bocc. mus.* 147. t. 106. *Raii suppl.* 142. n. 58.—see *hist.* 242. 15.
Stem branched, leaves lanceolate-linear almost entire.
20. *Hieracium chondrilloides*. *Gum-Succory Hawkweed*.
Lin. spec. 1128. *Reich.* 3. 641. *Jacqu. vind.* 273. t. 7. *austr.* 5. t. 429. *Villars dauph.* 114. *Krock. files.* n. 1284.
- H. alpinum pumilum, chondrillæ folio*. *Baub. pin.* 129. *prodr.* 64. *Raii hist.* 236. *Park. theat.* 796. n. 3.
Stem branched, stem-leaves elongate-toothed smooth root-leaves lanceolate entire.

21. *Hieracium murorum*. Wall Hawkweed.
Lin. spec. 1128. *Reich.* 3. 642. *hort. cliff.* 388.
fl. suec. 701. *lapp. n.* 284. *Huds. angl.* 344.
Wither. arr. 847. *Lightf. scot.* 437. *Hall. helv.*
n. 46. *Scop. carn. n.* 970. *Pollich pal. n.* 745.
Neck. gallob. 330. *Leers herbörn. n.* 617. *Krock.*
filef. n. 1288. *Villars dauph.* 124. *Allion. pedem.*
n. 785. *t.* 28. *f.* 1.
α. *H. pilosissimum*.
H. fol. pilosissimo. *Baub. pin.* 129. *Raii hist.* 239.
syn. 168. *Ger. emac.* 304. *f.* 1. *Petiv. brit. t.* 13.
f. 2. *Mor. hist. f.* 7. *t.* 5. *f.* 54.
β. *H. fylvaticum*. *Gouan illustr.* 56. *Villars dauph.*
125. *Retz. obs. i.* 27. *n.* 90. *Hall. helv.*
n. 46. *β, δ.* *Huds. β, δ.*
H. murorum laciniatum minus pilosum. *Baub. pin.*
129. *Lob. ic. i.* 587. *i.* (*Pulmonaria*). *Baub.*
hist. 2. 1034. *3.* (*Pilosella*). *Ger. emac.* 304. *2.*
Park. theat. 801. *f.* 2. *Petiv. brit. t.* 13. *f.* 45. 5.
(*Pulmonaria*).
γ. *H. macrocaulon hirsutum, fol. longiore*. *Raii syn.*
169. *Huds. δ.* *With. γ.*
δ. *Pulmonaria gallica rotundifolia*. *Barrel. ic.* 342.
Hall. helv. n. 46. *ε.* *Huds. γ.* *With. δ.*
Stem branched, root-leaves ovate toothed, stem-leaf
smaller.
22. *Hieracium humile*.
Lin. syst. 717.
Stem few-flowered, scarcely higher than the lower leaves,
which are hirsute and gashed.
23. *Hieracium paludosum*. Marsh Hawkweed.
Lin. spec. 1129. *Reich.* 3. 643. *fl. lapp. n.* 285.
suec. n. 702. *Huds. angl.* 345. *Wither. arr.* 849.
Lightf. scot. 438. *Hall. helv. n.* 45. *Scop. carn.*
n. 973. *Pollich pal. n.* 746. *Neck. gallob.* 330.
Leers herbörn. n. 618. *Krock. filef. n.* 1290.
Allion. pedem. n. 788. *t.* 28. *f.* 2. & *t.* 31. *f.* 2.
Villars dauph. 129.
H. montanum latifolium glabrum minus. *Baub. pin.*
129. *Mor. hist. f.* 7. *t.* 5. *f.* 47.
H. mont. cichorei folio. *Raii syn.* 166. *hist.* 235.
Petiv. brit. t. 13. *f.* 9.
H. latif. glab. ex valle Griesbachiana. *Baub. hist.* 2.
1026. f. 3.—& *1033. f.* 1.—*Ger.* 236. *emac.* 300.
Mor. hist. f. 7. *t.* 5. *f.* 47.
β. *H. mont. latif. glab. majus*. *Baub. pin.* 129. *Baub.*
hist. 2. 1032. *Raii hist.* 233. 13.
Stem panicked, leaves clasping toothed smooth, calyxes
hispid.
24. *Hieracium lyratum*. Siberian Hawkweed.
Lin. spec. 1129. *Reich.* 3. 644. *Gmel. fib. 2.* 24.
t. 9. *Krock. filef. n.* 1291.
Stem many-flowered, leaves lyrate smooth, calyx and pe-
duncles hispid.]
25. *Hieracium cerinthoides*. Honeywort Hawkweed.
Lin. spec. 1129. *Reich.* 3. 644. *hort. ups.* 238.
Gouan illustr. 58. *t.* 22. *f.* 4. *Scop. carn. n.* 971.
Villars dauph. 110. *t.* 32. *Allion. pedem. n.*
789.
Root-leaves obovate toothletted, stem-leaves oblong half-
clasping.
26. *Hieracium amplexicaule*. Heart-leaved Hawkweed.
Lin. spec. 1129. *syst.* 717. *Reich.* 3. 644. *mant.* 458.
hort. cliff. 387. *Gouan illustr.* 58. 6. *Hall. helv.*
n. 36. *Krock. filef. n.* 1293. *Villars dauph.* 131.
Allion. pedem. n. 792. *t.* 15. *f.* 1. & *t.* 30. *f.* 2.
Leaves stem-clasping heart-shaped somewhat toothed, pe-
duncles one-flowered hirsute, stem branched.
27. *Hieracium pyrenaicum*. Pyrenean Hawkweed.
Lin. syst. 718. *Reich.* 3. 645.
α. *H. blattarioides*. *Lin. spec.* 1129. *hort. cliff.* 387.
amæn. i. 151. *Mill. dict. n.* 3.
Crepis blattarioides. *Villars dauph.* 136.
[β. *H. pilosum*. *Lin. syst.* 718. *γ.*
Picris pyrenaica. *Lin. spec.* 1115. *Gouan illustr.* 53.
H. pyren. blattariæ fol. minus pilosum. *Herm. par.*
t. 184.
γ. *H. austriacum*. *Lin. syst.* 718. *δ.*
Crepis austriaca. *Jacqu. vind.* 270. *aust.* 5. 20. *t.* 441.
Allion. pedem. n. 808. *t.* 30. *f.* 1.
δ. *H. helveticum*. *Lin. syst.* 718. *ε.* *Hall. helv.*
n. 40.

- H. conyzæfolium*. *Gouan illust.* 59. *Villars dauph.*
137. B. Mor. hist. t. 5. *f.* 50. *Park. theat.* 788.
H. alpinum asperum conyzæ facie. *Baub. pin.* 128.
Leaves stem-clasping obovate-lanceolate toothed back-
wards, stem simple, calyxes loose.
28. *Hieracium molle*. Soft-leaved Hawkweed.
Lin. syst. 718. *Jacqu. austr.* 2. 12. *t.* 119. *Allion.*
pedem. n. 787.
Leaves lanceolate almost entire soft, the lower ones pe-
tiolated, flowers on peduncles forming a kind of corymb.
29. *Hieracium stipitatum*.
Lin. syst. 718. *Jacqu. austr.* 3. *t.* 293.
Stem branched, with only a leaf or two; leaves toothed;
down stiped.
30. *Hieracium villosum*. Villose Hawkweed.
Lin. syst. 718. *Reich.* 3. 646. *Jacqu. vind.* 271.
aust. 1. 55. *t.* 87. *Hall. helv. n.* 44. *Krock.*
filef. n. 1295. *Villars dauph.* 105. *Pluk. alm.*
t. 194. *f.* 2.
H. alpinum latifolium villosum magno flore. *Baub.*
pin. 128.
H. villosum alp. V. *Clus. hist.* 141. *Raii hist.* 239.
Ger. emac. 301. 2.
β. *H. valde pilosum*. *Villars dauph.* 106.
Pilosella f. Pulmonaria lutea angustiori folio, valde
pilosa, duplex. *Baub. hist.* 2. 1034. *Raii hist.*
240.
γ. *H. caule unifloro, fol. lævibus, radicalibus lingulatis*
obiter dentatis, caulinis ovato-lanceolatis amplexi-
caulibus. *Hall. helv. n.* 44. *δ.*
δ. *Variatio glabris foliis*. *Seguieu. suppl.* 269.
Stem branched, leaves hirsute, root-leaves lanceolate-ovate
toothed, stem-leaves clasping heart-shaped.
31. *Hieracium glutinosum*. Clammy Hawkweed.
Lin. spec. 1130. *Reich.* 3. 646.
Leaves lanceolate runcinate somewhat scabrous, flowers in
umbels.
32. *Hieracium Kalmii*. Kalm's Hawkweed.
Lin. spec. 1130. *Reich.* 3. 647.
Stem upright many-flowered, leaves lanceolate toothed,
peduncles tomentose.
33. *Hieracium undulatum*. Wave-leaved Hawkweed.
Ait. hort. kew. 3. 124.
Stem branched, leaves elliptic toothed waved hairy, hairs
plumose.
34. *Hieracium sprengerianum*. Branched Hawkweed.
Lin. spec. 1130. *syst.* 718. *Reich.* 3. 647. *Krock.*
filef. n. 1294?
H. pulchrum ramosum sprengerianum. *Baub. hist.* 2.
1026. *Mor. hist. f.* 7. *t.* 5. *f.* 17. *Raii hist.* 234.
Stem branched, leaves half-stem-clasping oblong repand
hispid.
35. *Hieracium spicatum*. Hairy Hawkweed.
Ait. hort. kew. 3. 125. *Hall. helv. n.* 43. *Allion.*
pedem. n. 795. *t.* 27. *f.* 1, 3.
H. prenanthoides. *Villars dauph.* 108.
Stem many-flowered, leaves stem-clasping hairy thinly
toothed.]
36. *Hieracium fabaudum*. Shrubby Hawkweed.
Lin. spec. 1131. *Reich.* 3. 647. *hort. ups.* 238.
fl. suec. n. 703. *Huds. angl.* 345. *Wither. arr.*
849. *Lightf. scot.* 439. *Engl. bot. t.* 349. *Hall.*
helv. n. 35. *Scop. carn. n.* 972. *Pollich pal.*
n. 747. *Neck. gallob.* 331. *Gmel. fib. 2. n.* 30.
t. 14. 2. *Fl. dan. t.* 872. *Krock. filef. n.* 1296.
Villars dauph. 127. *Allion. pedem. n.* 796. *t.* 27.
f. 2.
H. fruticosum latifolium hirsutum. *Baub. pin.* 129.
Park. theat. 802. *Mor. hist. f.* 7. *t.* 5. *f.* 59. *Raii*
hist. 238. *syn.* 167. *Petiv. brit. t.* 13. *f.* 7.
H. fabaudi varietas altera. *Baub. hist.* 2. 1030.
β. *H. fruticosum latifolium glabrum*. *Baub. pin.* 129.
prodr. 67. *Park. theat.* 801. *Raii hist.* 238.
syn. 168. *Petiv. brit. t.* 13. *f.* 9.
H. majus latif. pannonicum 2 Clusii. *Baub. hist.*
2. 1027.
γ. *Raii syn.* 170. 14. *Pluk. phyt. t.* 37. *f.* 3. *Petiv.*
brit. t. 11. *f.* 6.
δ. *Petiv. brit. t.* 13. *f.* 8.
Stem upright many-flowered, leaves ovate-lanceolate
toothed half-stem-clasping.

37. *Hieracium umbellatum*. *Umbelled or Bushy H.*
Lin. spec. 1131. *Reich.* 3. 647. *mant.* 459. *fl. lapp.*
n. 287. *suec. n.* 704. *hort. cliff.* 387. *Huds. angl.*
346. *Witber. arr.* 850. *Curtis lond. n.* 67.
Lighf. scot. 439. *Hall. helv. n.* 34. *Pollich pal.*
n. 748. *Neck. gallob.* 330. *Leers herb. n.* 620.
Fl. dan. t. 680. *Krock. fles. n.* 1297. *Villars*
dauph. 128.
H. fruticosum angustifolium majus. *Baub. pin.* 129.
Park. theat. 801. 4. *Raii hist.* 238. *syn.* 168.
H. majus angustif. *Clus. hist.* 2. 40.
H. fabaudum. *Dalech. hist.* 570. *Dod. pempt.* 638. 2.
Lob. ic. i. 240. 1. *Baub. hist.* 2. 1030. 1.
H. intibaceum. *Ger.* 234. 6. *emac.* 298. 5.
Pulmonaria. *Petiv. brit. t.* 13. *f.* 10.
β. *H. frut. angustif. minus.* *Dill. eph. nat. cur.* 5. 6.
app. t. 13. *f.* 1. *Vaill. par. t.* 48.—*Pulmonaria*
angustifolia glabra. *Raii syn.* 168. *Pet. brit.* 13.
f. 11.
γ. *H. frut. angustissimo incano folio.* *Vaill. Villars B.*
Pulmonaria graminea. *Pet.* 13. *f.* 12. *Raii syn.*
168.
Leaves linear, somewhat toothed, scattered, flowers in a
kind of umbel.
Other Species from Villars and Allioni.
38. *Hieracium Halleri.*
Villars dauph. 104. *t.* 34.
Leaves lanceolate, toothed, obscurely villose, stem some-
what branched, stiff.
39. *Hieracium valde pilosum.*
Villars dauph. 106. *t.* 30. v. *H. villosum, n.* 30. β.
Stem straight, almost simple, leaves stem-clasping woolly,
calyxes imbricate.
40. *Hieracium cydoniaefolium.*
Villars dauph. 107. *Hall. helv. n.* 45.
Stem straight, branching from the axils, leaves oblong-
elliptic, half-stem-clasping, toothed, calyxes hispid,
blackish.
41. *Hieracium scorzoneraefolium.*
Villars dauph. 111. *Hall. helv. n.* 44.
H. glaucum. *Allion. pedem. n.* 781. *t.* 28. *f.* 3. &
t. 81. 1.
β. *H. faxatile.* *Jacqu. obs.* 2. 30. *t.* 50.
Leaves linear-lanceolate, glaucous and hairy, stem oblique,
hairy and hoary, few-flowered.
42. *Hieracium glaucum.*
Villars dauph. 116.
Leaves lanceolate, glaucous, stem branched, stiff.
43. *Hieracium staticifolium.*
Villars dauph. 116. *t.* 27. *Allion. pedem. n.* 782.
t. 81. *f.* 2. *Hall. helv. n.* 48.
H. montanum angustifolium nonnihil incanum. *Baub.*
pin. 129.—*fol. oblongo non dissecto.* *Baub. phytog.*
213. *n.* 20.—*tragopogi fol.* *Baub. pin.* 129. *Tourn.*
herb.
H. macrostenophyllum. *Rich. icon.*
Chondrilla fol. non dissecto, caule nudo & foliato.
Baub. hist. 2. 1041.
Stem almost naked, leaves ligulate, obtuse, flower sul-
phur-coloured.
44. *Hieracium faxatile.*
Villars dauph. 118. *t.* 29. *Pluk. app. alt. t.* 194.
f. 3.
Pilosella incana faxatilis lutea. *Baub. pin.* 263. *Raii*
hist. 241. *n.* 18.
Auricula muris altera incana faxatilis. *Column. ecphr.*
250.
Leaves roundish, quite entire, stem almost naked, recep-
tacles hirsute.
45. *Hieracium Lawsonii.*
Villars dauph. 118. *t.* 29. *Dill. elth.* 180. *t.* 149.
f. 179.
H. leptocaulon hirsutum fol. longiore. *Raii syn.* 169.
Leaves oblong, villose, quite entire, stem straight, many-
flowered.
46. *Hieracium andryaloides.*
Villars dauph. 121. *t.* 29.
H. profunde sinuatum pubescens. *Baub. pin.* 129.
prodr. 67.
Leaves densely tomentose, curled or sinuate at the base,
stem spreading.

47. *Hieracium Liottardi.*
Villars dauph. 121. *t.* 29.
Leaves lanceolate, toothed, stem upright, two-flowered.
48. *Hieracium Jacquini.*
Villars dauph. 123. *t.* 28.
H. pumilum. *Jacqu. austr. t.* 189. See *n.* 2.
Leaves pinnatifid at the base, hirsute, green, calycine
hairs glandular, stem with about two flowers.
49. *Hieracium lanceolatum.*
Villars dauph. 126. *t.* 30.
Stem straight, stiff, leaves lanceolate, toothed, flowers in
a kind of corymb.
50. *Hieracium pulmonarioides.*
Villars dauph. 133. *t.* 34. See *Allioni n.* 792.
Leaves lanceolate, tooth-sinuate, those on the stem sessile,
peduncles proliferous.
51. *Hieracium albidum.*
Villars dauph. 133. *t.* 31. *Hall. helv. n.* 41.
H. intybaceum. *Allion. pedem. n.* 793.
Leaves gnawn, ligulate, hispid, stem subdichotomous, few-
flowered.
52. *Hieracium pappoleucon.*
Villars dauph. 134. *t.* 31. *Hall. helv. n.* 40?
H. grandiflorum. *Allion. pedem. n.* 794. *t.* 29.
f. 2, 3.
Leaves lyrate-spatulate, toothed, stem-leaves with two
ears embracing the stem on both sides, stem striated,
viscid, few-flowered.
53. *Hieracium florentinum.*
Allion. pedem. n. 775. *Hall. helv. n.* 54.
Stem brachiate, few-flowered; leaves lanceolate, long-
haired; calyxes smooth.
54. *Hieracium capillaceum.*
Allion. pedem. n. 779. *t.* 31. *f.* 3. *Baub. prodr.* 21.
p. 62.
Stem almost naked, one-flowered, leaves nerved, grassy,
quite entire.
55. *Hieracium succisaefolium.*
Allion. pedem. n. 786. *Hall. helv. n.* 47.
Leaves smooth, quite entire, root-leaves elliptic, on long
petioles, stem-leaves clasping, with blunt hooks.

DESCRIPTIONS, &c.

1. Root thick, perennial, blackish on the outside, white within. Stems round, upright, twice or thrice the length of the leaves, with only one or two subse-taceous leaflets on them, and a single flower at the end. Leaves all next the root, narrow lanceolate, somewhat attenuated at the base into the petiole, from two to six inches in length, erect; thickish, hoary on both sides, with a close nap of white hairs stellate at the tip; the stem also has the same sort of stellate hairs, only sessile. Calyx hispid, with like hairs, ascending; the scales of the calyx are acuminate. Corolla yellow. The receptacle is clothed with very short, villose hairs. Down sessile and plumose. ^a Native of Austria, Car-niola, the Palatinate, &c. on mountains; flowering in may, and ripening its seeds in june.

2. Root perennial, creeping, branched. Stems half a foot in height, generally procumbent and reddish. Leaves ovate or ovate-lanceolate, toothed, on a petiole an inch and half in length, which is set here and there with small leaves, so that the whole approaches to a lyrate leaf. Scapes simple, sustaining one flower, or at most two, and about the same length with the leaves. Calyx cylindric, upright; scales in three rows, ovate-lanceolate, about thirteen in number, tomentose on the outside. Corolla pale yellow, broadish, with five teeth at the end. Seeds russet, down longer than the seeds, simple, sessile; the hairs white, and a little toothed. On the Alps, and near the glaciers; in Switzerland, Savoy, Dauphiné, among pebbles and fragments of rocks ^b. This has been mentioned before, under the name of *Crepis pygmaea*.

3. This species is principally distinguished by the whole of the plant, but especially the calyx, being covered with long white hairs; and the scales of the calyx being remarkably loose.

The root is perennial and fibrous. The root-leaves are many, varying in form from bluntly ovate to ovate-lanceolate; they are most frequently entire about the

^a Jacquin.^b Haller. ^c Lin. mant. Allion. Villars.

edge, but sometimes they are slightly toothed: they are always sprinkled on both sides with white woolly hairs. The stalk is generally about five inches high, with hairs scattered over it, which are white except at the base, where they are fuscous: it is usually quite naked, or has only a small lanceolate bracte or two at top. It is terminated by one large flower, sometimes two, seldom more. Calyx swelling, before it opens globose, black, with white hairs standing out. Corolla pale yellow^c. Seeds oblong, five-cornered, rufous or brown, crowned with a simple, sessile, brittle down^d.

Native of Lapland, Switzerland, Dauphiné, Savoy, Carniola, Silesia, and the mountains both of Wales and Scotland. Flowering in July and August.

4. According to Lightfoot, the leaves are sometimes pinnatifid or jagged half way down to the rib, which is reddish; the petioles also red. The stalk six inches high, smooth towards the base, but hairy near the top, bearing a single yellow flower. Calyx black, covered with fuscous hairs. Seeds crowned with a sessile, plumose down, which character does not belong to this genus, and therefore Haller has placed it under his genus of *Picris*; Gärtner under *Vireia*; Hudson under that of *Hedynois*; and it has already been described under *Apargia Taraxaci*.

Native of the mountains of Switzerland, Scotland and Wales: flowering in July. Perennial.

5. Root-leaves on short petioles, having large teeth about the edge, almost linear, broader at the end. Scape entirely simple, a span high, naked. Calyx in proportion to the plant, large, smooth, formed of unequal scales. Corolla short, not large, yellow^e. Native of Austria and Silesia. Perennial.

6. Shrubby. Stem branched, leafless. Leaves radical, marked with blood-red dots and veins. Flowers small, yellow. Native of Virginia and Maryland.

7. Root perennial, creeping. Close to the ground come forth barren stalks or runners, procumbent, round, leafy, thickly covered with down and hairs: besides these, one solitary stalk generally arises from each plant or off-set, from four to seven inches or more in height, upright, round, simple, naked, hollow, hairy below, and hirsute above, having some little scales upon it, and supporting one flower at the top. Leaves on short petioles, ovate or oblong, on the runners lanceolate; perfectly entire, white beneath, with a thick close down, besides which they have numerous long hairs, each arising from a gland; the upper surface green, without down, but having many scattered hairs, which arise also from glands. Flowers near an inch in diameter. Calyx thick set with black hairs, which are globular at the end. Corolla pale yellow or sulphur colour, composed of about fifty florets, the outer having a broad purple stripe on the under side: each floret has five teeth at the end. Seeds oblong, blackish, striated; crowned with a sessile, simple down, twice the length of the seed^f.

It is observed by Pollich, that the leaves have frequently teeth round the edge, but so small as scarcely to be visible.

Mr. Woodward remarks, that he has never observed the Mouse-ear with more than one flower on a peduncle: Haller says that it has rarely two flowers; but Pollich affirms that it is sometimes found with two or three. According to Linneus, the flowers commonly open at eight in the morning, and close about two in the afternoon. An insect of the *Coccus* or *Cochineal* kind is found at its roots^g; but it has not been observed in England^h. It differs from other milky plants of this class, in being less bitter, and more astringentⁱ. On account of this astringency it was admitted into the shops as a medicine, under the name of *Auricula muris*; but is now little regarded^k.

It is very common in dry pastures, on sunny banks, and on walls: flowering from May to September.

8. In ascertaining this doubtful plant, it will perhaps be most satisfactory to give the opinions and descriptions of respectable writers separately. Linneus only

says, that the stem is rough with hair; that the leaves are the same, especially underneath^l; that it is larger in all its parts than *H. Auricula*, and does not creep^m.

—According to Mr. Hudson, it has many things in common with *H. Pilosella*, but is larger, and has the leaves hairy, not tomentose underneath. The scape bears from three to six flowers; is from six to nine inches high, and smooth.—Leers describes it thus. Runners creeping, several, leafy. Leaves naked underneath, somewhat hairy on the upper surface, ciliate at the base. Scape a span high, smooth and even, naked, with a single lanceolate leaflet at the base. Umbellar peduncles three or four, simple, involucre with as many short bractes. Flowers like those of *H. Pilosella*, nearly equal in height. Corollas pale yellow on both sides.—Krocker distinguishes this from *H. Auricula* by the following circumstances. The number of flowers is fewer, being only two or three; the stature less; leaves entire, or having very few teeth, more ovate-oblong, (whereas those of *H. Auricula* are lanceolate, longer, and quite entire), having a very few long hairs, in other respects smooth; they are on very short petioles. Scape upright, a span long, somewhat hirsute, frequently tinged with dusky purple, as are also the runners: these are decumbent and creep, the leaves on them are alternate, and glaucous green; but the scape is naked, or has at most a single leaf or two. Calyx swelling at the base, set with black hairs. Corollas more lemon-coloured. Down white.—Haller gives from five to eight flowers to the scape; and Villars says there are three or five to seven, or even ten.

Mr. Woodward thus describes a plant, which he received and cultivated for the *dubium*, and which he thinks is probably that species a little varied, though it does not perfectly accord with the specimens either of *dubium* or *Auricula*, as preserved in the Linnean herbarium.—It differs from *H. Pilosella*, in having leaves oblong wedge-shaped, very little concave, hairy on both sides, but more sparingly above, grayish, but not tomentose beneath. The first flowering-stems arise from the stolones erect, mostly two-flowered, rarely one, with equal divaricated fruit-stalks. The calyx and fruit-stalk clothed with hairs terminated each by a black globule; the lower part of the stem nearly smooth. The florets pale yellow on both surfaces. Such was its appearance at midsummer; in the autumn, the stolones threw out branches which did not root, each again bearing alternate branches, and terminated by a declining stem, bearing five or six flowers each on a fruit-stalk, alternate, similar in every respect to the former; at the base of each, a lanceolate bracte, and similar ones on the fruit-stalks. Seeds oval, striated: feather sessile, with few rays, simple, as long as the calyx.

Native of Sweden, Switzerland, Germany, Dauphiné, England, in moist places on mountains, as near Rydall in Westmoreland. It flowers in July and August.

Sheep are reported to eat this, and yet the foregoing species is said to injure them. But is it probable that two plants hardly to be distinguished, should thus differ in their properties?

9. Root præmorse, with numerous, simple fibres. Runners creeping, leafy. Scape upright, naked, scarcely half a foot high, having a few scattered hairs on it. Leaves lanceolate, mostly quite entire, sharp, naked. Flowers in a panicle, from three to six. Leaflets of the calyx linear, hairyⁿ.—Leaves lanceolate, acute, hispid, with very small hairs. The stem and calyx have black bristles scattered over them. Being translated into the botanic garden at Upsala in 1742, the year following it grew to the height of three feet, and bore flowers in a sort of umbel, on long peduncles^o.

Leers describes it thus.—Runners few, creeping, leafy. Leaves broad-lanceolate, slightly toothed, dark green, scabrous on both sides. Scape a foot high, the whole muricated with black bristles; these are more crowded at the base, above which is a single leaf.

^c Lin. lapp. & succ. Haller, Lightf.

^d Scopoli.

^e Krocker.

^f Curtis lond. Pollich. Woodward Mf.

^g Lin. succ.

^h Curtis.

ⁱ Withering.

^k Curtis

^l Syst. veg.

^m Fl. succ.

ⁿ Hudson.

^o Lin. succ.

Flowers terminating, in cymes, crowded. Peduncles five or six, branched, thickish, short, having unequal bristles, black at the base, scattered over them. Corolla deeper yellow on both sides. Receptacle somewhat hairy. It frequently varies with a single flowering-branch coming out from the middle of the scape.

Krocker distinguishes this from the foregoing species, by its having a higher stalk, and more flowers; longer, narrower leaves, more hirsute, with shorter hairs; the flowers sulphur-coloured; the calyx, like the stalk, having black bristles scattered over it.

According to Villars this differs essentially from *H. dubium*; for the leaves are glaucous, lanceolate, more hairy; and it has no runners: the stalk is about half a foot high, divides into two or three spreading branches, each bearing one flower, except the middle one, which has two or three: these are larger, and their calyx much more rude than that of the preceding sort. He can scarcely believe that his plant is the same with that of Linneus and other authors; but that his is a distinct species, and theirs only a variety.

Haller thinks that this (n. 52.) is scarcely a distinct species from *H. dubium* (n. 53.) though it be a higher plant, and bears more flowers. Pollich is of the same opinion; seeing that this differs only in size, having a loftier stem, with a greater number of flowers; and the leaves more hirsute, larger, sharper, and approaching nearer to a lanceolate form.

Native of Lapland, Sweden, Switzerland, Germany, Dauphiné, England, on mountains: as on Dalehead, not far from Graysmere, Westmoreland. It flowers in July, and is perennial.

10. *Root* præmorse. *Leaves* longish, acute, quite entire, erect, hispid on both sides, with stiff hairs. *Scape* a foot high, having fewer hairs scattered over it, but they are more crowded towards the bottom; it has a single leaflet above the base. *Flowers* almost umbelled, but with the pedicels branched; in which circumstances it differs from *H. præmorsum*: it is distinct from *H. Auricula*, in not having the leaves smooth on the upper surface^p.

Haller has two species numbered fifty-one; this is the second of them. He describes the leaves as having short hairs, and as being blunt at the end; in number two or three on the stalk; which is two feet high, not branched, except the peduncles be considered as branches, hirsute all over. Peduncles crowded on the top of the stem, branched, hirsute. Flower very small, yellow, with the calyx hirsute, in which it differs from the foregoing n. 51. or *H. præmorsum*.

Leers, who doubts whether his plant be the same with Linneus's and Haller's, thus describes it.—*Root* præmorse. *Runners* none. *Leaves* all next the root, erect, long-lanceolate, sharpish, smooth; the upper surface and keel somewhat hairy; hairs whitish, flexuose, purple at the base. *Scape* a foot and half high, striated, almost smooth, with a naked, lanceolate leaflet below the middle. *Peduncles* terminating, longer than in the foregoing species, slenderer and more branched, cymose during the time of flowering, but afterwards unequal, and forming a sort of panicle. Flowers the same size as in *Crepis tetiorum*. Calyx whitish, with short black bristles scattered over it. Corollas pale yellow on both sides.

According to Monf. Villars, this species is easily distinguished. The stem is straight, about a foot high, terminated by a cyme of flowers so close that the peduncles are seen with difficulty, though they are branched. Leaves oblong, hairy, reddish, rough and entire: the stem has one or two at the base; it is hairy, and marked with reddish glands, from which the hairs take their rise; the calyx is also hairy.—Monf. Villars doubts whether his plant and Linneus's be the same with that of Leers, which he refers to his *H. piloselloides*. He also remarks that Haller has given some synonyms (as that of Casp. Bauhin and Columna, whose figure represents this very well) of the species under consideration, to his n. 52., which is *H. Auricula*.—He mentions two varieties; one with red flowers, and another with from three or four to six scattered flowers, as large again as the common sort.

^p Linn. spec.

Native of Russia, Denmark, Germany, Switzerland, Dauphiné. Flowering in June. Perennial.—Cultivated by Mr. Miller in 1739^q.

11. *Root* perennial, fibrous, frequently truncate or præmorse. All the *leaves* next the root, the first obovate, the rest rather lanceolate, sharper, scabrous, pale green, sometimes, but very seldom having one or two teeth. *Scape* erect, naked, a foot high, scabrous, striated. *Flowers* in a panicle containing frequently from sixteen to twenty. Peduncles naked, having a linear leaflet at their origin, spreading, after flowering-time longer than the calyx: the lower ones usually three-flowered. Calyxes with linear leaflets, not hispid. Down a little longer than the calyx^r.

Krocker distinguishes this from the foregoing species, by the leaves not being quite entire, but somewhat toothed, and also broader than in that, being five or six inches in length, and an inch, or an inch and half in breadth. The flowers are small, each supported on a simple pedicel, which has a lanceolate stipule at the base; forming all together a sort of spike. Stem higher, villose, hollow, naked, striated. Root præmorse, as in that.

Pollich describes the leaves as ovate, acuminate, very slightly sinuate-toothletted, running down into the petiole, three or four inches long, somewhat pubescent on both sides.

The herb watches from seven o'clock in the morning to six in the evening, when the panicle of flowers also nods^s.

Native of Sweden, Germany, Switzerland, Siberia. It flowers in May and June.

12. *Root* perennial, creeping. *Stem* scarcely branched (except with the peduncles), bearded with white hairs placed on black glands (according to Haller the hairs are black), upright, a foot or a foot and half in height (two feet high, Haller). *Leaves* next the root rather ovate, on the stem ovate-lanceolate or lanceolate, quite entire, dusky green, narrowing into the petiole, obtuse, alternate, the upper ones sessile; the lower ones a span long, and an inch broad. *Stipules* very small, lanceolate. *Flowers* eight or ten, on short pedicels, forming a short panicle. Calyx black, hispid; with narrow equal scales. Corolla dark red. *Seeds* columnar, furrowed, black; with a white simple down^t.

Native of Austria, Switzerland, Silesia, Dauphiné, Piedmont. It flowers from June to autumn. It varies much in the colour of the flower, from red to orange, and several shades of yellow. It is called by our old writers *Golden Mouse-ear*; and, when of a dark colour, *Grim the Collier*.—Cultivated by Mr. Miller in 1739^u.

13. This approaches very near to the *Hieracium* figured by Dillenius; (*elth. t. 149. f. 179.*) but it differs, in having the leaves more blunt, those next the root almost sessile, scarcely toothed; the stem more erect and slender, hairy only at bottom, and the leaves only half the size. The few leaves that there are on the stem are ovate and embracing^x. Native of Virginia.

14. *Root*-leaves on long petioles, an inch in length, reckoning the petioles, three inches and more, half an inch in breadth, ending in a short point. Stems a long span in height, round, firm, upright, undivided for two thirds of the length, then dividing into subhirsute branches of various lengths, forming a sort of umbel. At the origin of each branch there are short and very narrow stipules, and the peduncles have a scale or two of the same sort. Each branch is either simple, or divided into two or three peduncles, from an inch to two inches in length, hirsute, and all terminated by a yellow middle-sized flower. Calyx simple, scales eight or ten, hirsute, with blackish hairs, and some short little scales at the base. Native of Siberia: found by Steller^v.

15. *Root* thick, long, like Navews, with one or two branches. Leaves next the root two or three inches long, resembling those of *Barbarea*, *Lapsana*, and

^q Hort. kew.

^r Linn. fl. suec.

^s Ibid.

^t Krocker, Haller.

^u Hort. kew.

^x Gronovius.

^v Gmelin.

Crepis testorum, runcinate or lyrate, with from five to seven small, obtusely triangular pinnules on each side, almost opposite, scabrous and rough, with hairs on both sides; other very small pinnules are frequently interposed; the extreme pinnule is near an inch long, cordate-hastate or ovate, angular, with larger teeth, as in *Alliaria*, *Cacalia*, &c. Scapes leafless, coloured, one to six, from a palm to a foot or eighteen inches in height, hispid with spreading hairs, usually more hirsute towards the top, at first bowed towards the ground, then erect. Branches or peduncles very hairy, alternate, but near to each other, an inch or two in length, one-flowered; from the top they come out three together. Calyxes calyced like *Crepis pulchra*; the lower or outer scales very small, ovate, acute; the inner calyx consists of equal, lanceolate-oblong, acute, smooth scales, membranaceous and white at the edge. Corollas yellow, the size of *Crepis foetida* and *testorum*. The marginal seeds are thicker, shorter, winged, bowed inwards, with the edges a little revolute, the dorsal nerve green, and each rolled up in a scale of the calyx, as in *Caltha*, *Rhagadiolus*, and *Hyoseris*; these have no down. The central seeds are narrow, longer, straight; and have a hairy, sessile down.—It differs much from *Hypochaeris*, in having naked, but not scaly peduncles; from *Hieracium* in having a calyced, not an imbricate calyx. Hence Gouan has inserted it in the genus *Crepis*.

Native of Palestine, the South of France, and the County of Nice^a.

16. Scape a foot high, even, with a few, very small, awl-shaped leaves alternately scattered over it. Flower terminating, from the axil of the leaves. Native of the Cape of Good Hope^b.

17. Root perennial, single, deep, blackish. Stem single, undivided, straight, from a foot to two and even three feet in height, in a fertile soil. Stem-leaves decreasing in size up to the flower, the uppermost being nothing more than a scale; the others surround the stem with their rounded base, and end in a lengthened point. Ray says, that the leaves resemble those of Endive, but are narrower, that they are a span long, smooth and sinuated.—Flower large. Calyx very villous and ruffet. Corolla yellow. Seeds separated by silky threads, of the same length with themselves^c.

Linneus had made it a *Hypochaeris*, but the receptacle having no chaffs, it has been removed into this genus^d. Monf. Villars makes it an *Andryala*, on account of the silky hairs upon the receptacle.

Native of the mountains of Savoy, and Dauphiné, in pastures.

18. Stem a foot high, round, woolly-white at bottom, smooth at top. Leaves broadish, attenuated at the base, acuminate, remotely toothed, tender, smooth; the lower ones hairy underneath, especially along the keel. Panicle terminating, variously branched, with very slender, divaricating peduncles. Bractes at the ramifications very short, bristle-shaped. Flowers small. Observed in Canada by Kalm^e.

19. Stem a foot high, round, almost naked, having only a single leaf or two on it, and very few leafless branches. Root-leaves lanceolate, upright, with one or two sharp teeth, even, having a few villose hairs along the keel: stem-leaves minute, very few. Calyx imbricate, hoary, oblong. Corolla yellow, not one of the largest^f. The whole plant, according to Villars, has the smell of the wild lettuce, in a greater degree than any of the Hawkweeds.

Native of the South of France, the Valais, Austria, Silesia, Italy. Perennial. Introduced by Doctors Pitcairn and Fothergill in 1775^g.

20. Stem a span high, even. Root-leaves petioled, smooth: stem-leaves five or six, alternate, long, with long recurved teeth, like those of *Leontodon autumnale* (*Apargia autumnalis*). Peduncles from the upper axils of the leaves, the same height with the stem, solitary, almost naked, one-flowered. Bractes one or two, bristle-shaped, subvillose at top. Calyxes black-

hispid, upright, imbricate, with linear leaflets. Corolla yellow^h.

Native of the South of France, Austria and Silesia: flowering in June and July. Cultivated in 1640ⁱ.

21. This plant varies exceedingly, as appears from the different figures which are given of it. The general appearance is as follows:—Root simple, producing one slender stem, a foot or fifteen inches high, cylindrical, having soft hairs scattered over it, slightly striated, reddish towards the base; sometimes naked, or nearly so, sometimes clothed with leaves similar to the others, only more acute. The root-leaves vary considerably, but the most usual form is oval-lanceolate, pointed at both ends, and marked with a few large teeth towards the base, entire upwards, hairy on both surfaces, but the foot-stalk and midrib most so. Flowers in a branched panicle on separate peduncles, with each an awl-shaped bracte. Calyx of numerous, unequal, linear-lanceolate leaves; the lower ones spreading. Corolla yellow. Seeds nearly cylindrical, furrowed, smooth, dark purple, crowned with a sessile down, as long as the seed; rays simple, the length of the calyx^k.

Linneus observes, that the flowers open about six in the morning, and close about two in the afternoon. Lightfoot informs us, that about eighteen days elapse between the first expansion of the flower and the ripening of the seed.

It is a perennial plant, is found in woods, on old walls, on shady banks, &c. and flowers in June and July, sometimes in May. By our old authors it is called *French* or *Golden Lungwort*.

β. In this variety, which is made a distinct species by Gouan and Villars, the root-leaves are narrower, and more slightly toothed. Stem-leaves several^l.—Villars says, that it grows to the height of three or four feet; that the stems are straight, leafy, and terminate in several branches; that the leaves are oblong, lanceolate, often toothed, dusky green, a little ash-coloured, and soft to the touch. The peduncles have two scales next the calyx, as in the common plant, but the calyx is larger; the seeds oblong, channelled, very dark purple, shorter than in the other sorts, very like those of *H. sabaudum*, which bears much resemblance to this plant in other respects. The egret or down is short, yellowish white or brown, brittle and straight.

Retzius describes a plant which he takes to be the same with this, as having the root almost præmorse, and seeming to consist wholly of fibres; several stems, which are leafy, hairy, and many-flowered; root-leaves petioled, ovate-lanceolate, either entire or toothletted, hairy, especially at the edges and along the nerve, running down into very hairy petioles, which are dilated at the base; stem-leaves lanceolate and sessile; bractes awl-shaped at the base of the peduncles, and on the peduncles themselves; flowers smaller and paler than in the common sort.

Johnson relates, that it was found by Mr. William Coote, in the old Roman camp at Sidmonton near Newberry^m.

γ. With very narrow leaves, on rocks by the rivulet between Shap and Anna well in Westmorelandⁿ.

δ. With roundish-ovate leaves; thus described by Mr. Woodward. Root thick, woody, running deep among loose stones, terminating in long dark brown fibres of the thickness of packthread. Root-leaves on hairy foot-stalks, obtusely oval, obscurely toothed, with a few hairs on the upper, and many on the lower surface, spotted with numerous dark-red spots. Stem about six inches high, naked, bearing one flower on the summit, and two imperfect sessile ones a small way beneath it: under the lowest are two-awl-shaped bractes. The lower part of the stem is slightly hairy, the upper part and calyx more so. He gathered this elegant variety on Conzick Scar, near Kendal in Westmoreland: and it has been found at several other places in the north. Lightfoot mentions five varieties:

1. With leaves sprinkled with white spots; which

^a Gouan. illustr.

^d Murr. in fyt.

^b Linn. amoen.

^e Linn. spec.

^g Hort. kew.

^c Villars.

^f Linn. mant.

^h Linn. spec.

^k Woodw. Mfs.

ⁱ Hort. kew. from Park.

^l Stokes.

^m Ger. emac. 305.

ⁿ Ray fyn.

Ray found frequently abroad, and in the woods near Cuckfield in Suffex^o.

2. With narrower and more lanceolate leaves: probably our γ .

3. With radical leaves roundish: our δ .

4. With leaves pinnatifid at the base.

5. With naked unbranched stalks, bearing two, and sometimes only one single flower. Frequent upon the highland mountains in dry rocky places. Figured by Petiver, *herb. brit. t. 11. f. 4.*

22. Murray says, that Professor Jacquin has allowed this to be different from *H. pumilum*, n. 2.

23. Root perennial. Stem from one to two feet high, hollow, furrowed, smooth, generally bright purple at the base. Leaves alternate; the lower petioled, oval-lanceolate; the upper stem-clasping, lanceolate, deeply toothed towards the base, entire at the summit; the uppermost entire; all smooth; the foot-stalks and midrib of the lower leaves sometimes purple as the stem, particularly on the under surface. Flowers single, smaller than in *H. murorum*. Leaves of the calyx linear-lanceolate, covered on the back with numerous black hairs. Peduncles smooth^p.

The flowers open at six in the morning, and close at five in the afternoon. Possibly it may be only a variety of *H. murorum*, though it has acquired, from its place of growth, so very different an appearance^q.

Native of many parts of Europe, in moist meadows and woods, and by the sides of mountains, rivers and rivulets. With us in several parts of the northern counties of England, and in Scotland.

24. This is very nearly allied to the foregoing. Stem even. Calyxes pubescent, as are also the peduncles, which is not the case in that. Leaves more lyrate, petioled, with blunter angles. Native of Siberia^r. Introduced in 1777, by Mons. Thouin^s.

25. Root perennial, black, branched, frequently ending abruptly. Plant evergreen. Stem eighteen inches high, branched at top, bearded at the base only, or between the sheaths of the root-leaves, with long white hairs, closely crowded together, in other parts quite smooth, glaucous, shining, slightly striated. Leaves thin; the bottom ones of various sizes, from three inches to a foot in length, from an inch and half to two inches in breadth, seldom sharp, narrowing into the petiole and decurrent, with a few very small teeth from the base only to the middle, thence always quite entire to the end; the younger ones are greener, only with white hairs underneath; those which are more advanced are quite bald, except at the base of the petioles and along the midrib, of a yellowish green, or glaucous. Stem-leaves oblong-ovate, broader at the base; the uppermost and those on the branches are more cordate and sharper. Corymbes, alternate, many-flowered branches spring forth about the middle and upper part of the stem. Peduncles one-flowered, ash-coloured, and hispid, with long hairs, single from the axils, with a scale about the middle of them. Calyxes acute, scarcely pubescent at flowering time^t.

Linneus refers to Tournefort, and Mons. Villars says, that Tournefort's plant, which he had seen in the Paris garden, has a strong, branching stem; cordate, villose, glaucous, toothed leaves; and large flowers: so that it is between the *H. villosum* and his *scorzoneraefolium*. He adds, that Linneus's plant, in its pointed leaves, villose and glaucous on both sides, its large flowers, and its calyx, approaches to his *H. villosum*: and that Gouan's, in the multitude and smallness of the flowers, approaches rather to his *H. prenanthoides*.

Gouan remarks, that it varies in its native place, with a stem scarcely a hand in height, with two flowers, and a single leaf, if any. Native of the Pyrenees. Cultivated in 1739, by Mr. Miller^u.

26. Allied to *H. villosum*, and still more to *pyrenaicum*. The whole plant has hairs glandular at the tip, thinly scattered over it. Stem a foot high, striated: branches usually two-flowered from the upper axils. Leaves cordate (the lower ones oblong) green on both

sides, finely toothed. The panicle has a pile between the hairs, by which it is almost tomentose^x.

Native of the Pyrenean mountains. Cultivated in 1739 by Mr. Miller^y.

Gouan, who makes the next a variety of this, says that no species varies more, but that it may easily be distinguished by its pleasant balsamic smell whilst young, and by the whole plant abounding in glutinous hairs, having globules at the end.

According to Villars, the constant characters of the species in all the varieties are, the great quantity of glandular hairs, which give it the smell of baum or new honey; the openness of the lower scales of the calyx; the russet colour of the whole plant; the truncated root; and the hairs of the egret brittle, and elbowed at the base.

27. This species also varies so much as not easily to be determined. It partakes of this genus, *Crepis* and *Picris*; and seems very nearly allied to *Crepis sibirica*^z. Which however differs from this totally, according to Mons. Villars: the stem being single in *Cr. sibirica*, four feet high, terminated by several spreading branches, the side ones higher than those of the middle, as in *Crepis biennis*; the leaves three times as wide and longer, almost smooth, dark green above, the form and colour of turnep leaves; the stem-leaves cut, lyrate at the base, the upper ones linear; the calyx not double, angular, dark, with black hairs, that have no glands at the end. Seeds oblong, with a white sessile egret.

α . Root perennial, fibrous, forming a tuft, whence spring several stems, a foot and half high. Leaves more or less villose; the lower oblong and toothed at their base; those on the stem shorter and clasping. Peduncles several, solitary, from the upper axils, each terminated by one large, yellow flower, in which the florets are separated and dispersed. Calyx double; scales of the outer linear, of the same height with the others, but less villose; the inner black, ciliated on the back, and sometimes glandular. Seeds long, with a white sessile egret. Receptacle a little villose. Native of Dauphiné^a.

β . Root as in *Hypochaeris radicata*. Stem two feet high, upright, slightly striated, hairy, branched only at top; branches naked, alternate, one-flowered, forming a sort of corymb. Leaves hispid on both sides, with hairs standing out; the lower ones three inches long, lanceolate, an inch broad, acuminate, narrowing at the base into the petiole, half-stem-clasping, toothed; the segments also sometimes toothed. Stem-leaves sessile, broader at the base, half-stem-clasping. Peduncles or branches three inches long, axillary, alternate, clothed at top only with very small, loose, wandering scales. Calyx ovate, with the outer scales loose and very small; the inner twice as long; all hairy on the dorsal nerve. Corolla yellow. Down feathered, sessile.—In appearance it very much resembles *Picris hieracioides*; from which however it differs in having alternate, long, one-flowered peduncles; larger hairy calyxes, not hispid; and the teeth of the leaves spreading.—Native of the Pyrenean mountains^b.

γ . From a woody, perennial, brown, divided root, arise a few, simple, round, smooth, upright stalks, striated, and more or less hispid at top, annual, from a foot to a foot and half in height. Root-leaves very few, obversely lanceolate, toothletted, narrowing gradually into a long petiole: on the flowering plant there are commonly none of these. Stem-leaves alternate at certain intervals, lanceolate or ovate-oblong, acute, toothletted, not sinuate, stem-clasping, very slightly hirsute, the longest four inches in length, thin. Peduncles three or four, (sometimes only a single terminating one) axillary, solitary, almost of the same height, upright, hispid, striated, leafless, or having only one or two ciliate bractes. Flower large and elegant, yellow. Calyx hispid, with long bristles; leaflets very many, oval, acuminate, black, almost equal; the outer ones very loose. Seeds oblong, crowned with a white, sessile, simple down. It is therefore very nearly allied to *Crepis sibirica*, differing from it principally

^o Ray hist. 239.

^q Linn. succ. & spec.

^r Hort. kew.

^p Woodw. Mfs.

^r Linn spec.

^s Hort. kew.

^t Gouan.

^x Linn. mant.

^y Villars.

^z Hort. kew.

^a Linn. syst.

^b Gouan.

in the leaves.—Native of Austria, flowering there in august^c.

δ. In habit this differs not much from *Picris pyrenaica* and *hieracioides*, but it does abundantly in having all the leaves minutely toothed. Stem-leaves much sagittate, with very acute earlets. Peduncles long, one-flowered, swelling below the flower, black with hairs, without any such wandering scalelets as there are in *Picris pyrenaica*. Calyxes ovate, with black hairs all over them, not at the angles only, imbricate with loose scales. Down simple, sessile^d.

Native of Switzerland, &c.

28. Root perennial, blackish, bitten, and furnished with long white round fibres: it produces annually a simple, upright, striated, purplish, somewhat hairy, leafy stem, of about a foot or two in height; the top of which is divided into a few single-flowered or two-flowered foot-stalks, of about an inch and half long, and a little hairy. The leaves are oval, obtuse, quite entire, villose on both sides, and soft. The upper ones are sessile; the lowest and radical ones a little narrowed into a foot-stalk either simple or submarginated: in some individuals these leaves are a little toothed; and again in others lanceolate, and that either obtusely or acutely; so as to differ a little from the more common appearance. The calyx is oblong, and consists of leaflets disposed in a single series, not imbricated, nearly equal, sharp, erect, concave, blackish-green, and hairy. At the base commonly stands a little scale or two, scarce observable. Corolla deep yellow, with anthers and stigma of the same color. Seeds striated, rufescent, crowned with a sessile down, which appears toothed when magnified: the other particulars agree with the Linnean character. It grows about the borders of the subalpine woods, flowering in july, and producing seeds in august. It approaches nearest to the *Hieracium murorum*, with which it often grows mixed; but is truly different, and even distinguishable at a distance by the number of leaves on the stem, and the colour of the flowers. When cultivated in a garden, it flowers about the end of may and beginning of june, and grows more branchy from the bosoms of the leaves; but in other respects does not change its habit.—Native of Austria. Was discovered also in Scotland in the year 1780 by Mr. Dickson.

29. This plant grows a foot high or higher, on hilly meadows; flowering in june, and seeding in july. From a perennial, bitten, oblique, round root of about the length of an inch and half, and the thickness of a quill, of a paleish brown colour, and increased by small fibres, it produces annually a solitary, round, somewhat striated, fistulous stem, smooth below, and above rather hispid, with scattered dark hairs: it is either furnished with one leaf, or else is quite aphyllous, and divided into two, three, or four single-flowered foot-stalks, which are upright, and have each a small leaf or stipule beneath. The radical leaves are few, and are gradually attenuated and lengthened downward (or into the foot-stalk) from an obverse-ovate and rather mucronated shape: they are thin, very smooth on both sides, sparingly dentated, and of a bright green, with pale green backs. The cauline leaf, when present, is oblong-lanceolate, sessile, sharp-pointed, somewhat dented, and according to the different height of its insertion is sometimes quite smooth, and sometimes hispid, like the stem. The calyx is nearly equal, and blackish-green; with sharp scales, thickly haired with black hairs. The corollules are yellow and five-toothed. Anthers brown. The calyx is reflected when in seed. Receptacle naked, punctated, and flat; sustaining oblong, obtuse, brownish, submuricated, oblong seeds, crowned with the pentaphyllous calyx, and with a simple stipitated down. It has most particulars common to most of its congeners: it recedes from *Hieracium* in the foot-stalk of the down; so that it might seem to constitute a singular genus^e.

Native of Austria.

30. Stem striated, somewhat hairy. Branches the height of the stem. Root-leaves lanceolate, broadish, somewhat hairy, with unarmed teeth. Stem-leaves

cordate, clasping, converging upwards at the base. Peduncles one-flowered, with a remoter calycine bracte. Calyx spreading, less imbricated, with leaflets nearly equal in length, and hairs black at the base, and a yellow gland at the top scattered over them. Seeds black, with a sessile, simple down^f.

It varies, says Jacquin, so much in different soils, that it is difficult to give such a description as will agree with every individual.—Root knobbed, unequal, blackish, perennial, with round, whitish fibres. Stem upright, round, hairy, about half a foot in height, greenish-ash-colour, often dotted with brown; it has few leaves on it, and is commonly quite simple, terminated only by a single flower, with sometimes, but very seldom another peduncle or two from the upper axils. Root-leaves few: stem-leaves alternate, nearer the lower they are, pale green, somewhat toothed, acute, sessile, having long white hairs, especially on the midrib and along the edges; the lower ones oblong, attenuated at the base; the middle ones subovate; the uppermost subcordate: sometimes these are waved, but they are more often flat. The points of the leaves are brown. Flower large, handsome, yellow. Calyx loose, with black dots, and much white wool^g. Seeds short, with a sessile, simple egret, appearing toothed with a magnifier.

The hairs on this plant are almost all very white, long and feathery; there are some, however, shorter, and terminated by a gland^h.

Native of Dauphiné, Switzerland, Austria, Bohemia, Silesia, in mountain pastures. Found also on moist rocks on Ben Nevis mountain in Scotland by Mr. James Dickson, in 1789.

β. Stem simple, terminated by one or two flowers, higher by half than that just described. Scales of the calyx not open. The whole plant less white, more rufescent; and the long feathered hairs, which are almost the only ones in that, are in this mixed with other single ones, that are shorter and glandular, and also with a third sort, very fine, branched and sessile, making the calyx farinaceousⁱ. Native of Dauphiné, Switzerland, &c.

γ. Stem straight, eighteen inches high, with long hairs at bottom, otherwise smooth, one-flowered. Root-leaves half a foot long, lanceolate, less than an inch in breadth, smooth, except that sometimes the midrib has very long hairs on it; they are tender, and either entire on the edge, or with a very few short teeth. Stem-leaves several, oval-lanceolate, half-stem-clasping, not hooked. Flower large, yellow; the calyx bearded with fulvous hairs, which become hoary. Native of Switzerland^m.

δ. Jacquin mentions his having found a variety of this, in moist meadows, and in a lower situation, which was quite smooth and glaucous, or had very few hairs on it, which was probably the same with this of Seguiers.

31. This has the habit of *Crepis tetorum*. Leaves soft, clammy; the upper ones lanceolate, quite entire. Stem striated. Root annual. Native of the South of Franceⁿ.

32. Stem erect, narrower than in *H. sabaudum*, even. Leaves alternate, subsessile, acuminate, small, naked, more finely toothed on the outside than any of the sorts. Peduncles at the top of the stalk, alternate, commonly simple and one-flowered, white-tomentose; with fewer, linear bractes. Flowers small, terminating, upright. Found by Kalm in Pennsylvania^o.

33. Native of Spain. Introduced in 1778, by Messrs. Kennedy and Lee^p.

34. The stem has a few stiffish hairs on it, with alternate, shorter, simple branches. Leaves clasping, ovate, bluntish, ciliate, thinly hairy, but more underneath. Calyxes terminating, several, peduncled, scatteringly haired^q.—Native of Portugal. Introduced in 1783, by Mr. John Græfer^r.

This having a plumose, stipitated egret or crown to

^f Linn. spec.

^g Ibid.

^h Ibid.

ⁱ Jacq. vind.

^m Haller.

ⁿ Hort. kew.

^o Hort. kew.

^p Villars.

^q Linn. spec.

^r Linn. syst.

^c Jacq. vind.

^d Gouan.

^e Jacquin.

the feed, cannot belong to this genus, and hence Gartner has made it a species of *Helmintia*.

35. Stem firm, hirsute, three feet high. Leaves soft, ovate, acuminate, hairy at the edge, and on all the nerves of the lower surface; the lower ones are petioled, the upper stem-clasping, hooks blunt, teeth very short, if any. Stem naked at top, many-flowered; peduncles branching, bearded with a black pile. Calyx also black, with hard hairs^{*}.

Allioni remarks, that the root-leaves indeed are toothed, but the stem-leaves entire, or scarcely toothletted, half-stem-clasping, rounded at the base, ovate-lanceolate, dusky green above, and turning black in drying. Flowering-branches axillary. Calyx subcylindric, bearded with black hairs. The whole plant is hirsute, with short hairs.

The smallness and great number of flowers in this plant, joined to their conical form, and the disposition of the branches, which subdivide and divaricate at right angles, distinguish this plant from all the known *Hieraciums*.

Native of Switzerland, Dauphiné, and Piedmont. Found by Mr. James Dickson in woods in the south part of Scotland, 1789.

36. Root fibrous, perennial, yellowish ash-colour on the outside, white within. Stem upright, cylindrical, from two to three feet high or more, mostly hairy towards the base, smooth towards the top, striated, green, with red dots; branched, sometimes from half or two thirds of the way up; the uppermost branches often springing from one point in manner of an umbel; those below alternate. Leaves alternate, at their base closely pressed to the stem, and half embracing it, often crowded together in one part, somewhat rigid, thickish, sinuate-toothletted, or very distinctly toothed on the edge, the teeth few, sharp, pointing forwards, a little oblique, often somewhat waved, dark green, and almost smooth above, pubescent and paler on the under side, somewhat rugged, frequently painted with bloody spots; the larger ones more than five inches long, and an inch and half wide; the upper ones shorter and narrower, with fewer toothlets; those next the flowers very small, and quite entire. Branches subdivided, and the last subdivisions one-flowered, but not in form of an umbel, as in the next species. Peduncles erect, whitish with pubescence, a little thicker at top, having scales scattered over them, forming a thin corymb. Flowers yellow, an inch and half in diameter. Calyx almost cylindric, but a little wider at the base; segments (fifty-three) lanceolate, sharpish; the outer ones shorter, unequal, spreading at top, but not reflex, as in *H. umbellatum*, slightly pubescent or smooth, dark green; the inner equal. Florets (seventy-seven) striated, seven or eight lines long, five-toothed, blunt, above a line wide, a little hairy on the outside about the top of the tube. Seeds linear, striated, crowned with a simple sessile down^u. Receptacle naked, (often a little hairy) cellular: more rugged than in the other species, according to Linneus. Dr. Withering says, that it is thinly set with fine, white, taper, chaffy bristles. According to Villars it is alveolate, as in *Leontodon hispidum*. The flowers open at seven in the morning, and close between one and two in the afternoon: in July, August and September:

It varies with leaves covered with a short and just perceptible down, so as to have the appearance of being smooth; with one flower only on a stem; and with broad-lanceolate leaves on very short foot-stalks.

Native of most parts of Europe, in woods and hedges: in Britain not very common. It flowers from July to September.

37. Root perennial, præmorse or truncate, yellow on the outside, white within, having many fibres in bundles. Stem from two to four feet high, upright, simple, round, striated, hollow, nearly smooth, green, frequently dotted with red, alternately especially towards the top, dividing into branches. Leaves numerous, alternate, scattered, decreasing in size upwards, sessile, linear-lanceolate, having a few sharp teeth towards the base, the margins and nerves slightly hairy,

somewhat rugged on both sides, four inches long, and seven lines broad. Flowers in a kind of umbel, solitary on branched, pubescent peduncles, which thicken under the flower, and have an awl-shaped bracte or two on them. Calycine leaflets unequal, linear-lanceolate, (fifty-two). dark green, squarrose; outer somewhat downy, shorter, reflex at the tip; inner smooth. Flowers large, yellow, containing as far as ninety-seven florets. Seeds cylindrical, smooth, grooved, blackish, crowned with a sessile yellowish down, having simple rays, as long as the calyx. Receptacle naked, alveolate^{*}.

This species is often confounded with the preceding, by intermediate individuals that partake the characters of both, and perhaps they are more distinguishable by the eye, than by the specific differences. In general this has narrower leaves, though they are not always linear, but sometimes lanceolate, or even ovate; and the flowers grow in an umbel, or spring from one common centre, though the stem often becomes branched half way up, producing scattered flowers all the way; the outer calycine scales are more separated than the inner ones, or squarrose, as Linneus calls them; but this is not a constant character, any more than the colour of the seeds; so that there does not seem to be any certain mark of separation between them[†]. Mr. Curtis thinks that the most obvious character of the species consists in the narrowness of its leaves.

Native of most parts of Europe in dry pastures. In Britain not very common. Near London, on sandy or gravelly heaths, about Hamstead, Barnet and Charlton; near Hildertham and Gamlingay in Cambridgeshire, &c. It flowers in July, August and September.

It is a strong-smelling plant, and in Scania is used as a dye, communicating to wooll an elegant and beautiful colour[‡].

This plant varies much in size, shape, smoothness, &c. of the leaves; and in the disposition of the flowers. In the smaller specimens the leaves are less toothed, and frequently quite entire, with the stalk sometimes simple and one-flowered: in the larger specimens the stalk is much branched, and the leaves are more toothed or even jagged: it rarely has the umbellate appearance in perfection[§].

38. This plant resembles the *alpinum*; but that has oblong, blunt, silky leaves; weak, thin stems, and a lanuginose calyx; this has pointed leaves, villose but rude, of a dirty dark green, as well as the stem and calyx: the stem is more firm and thick, and frequently shorter; the calyx is thicker, and the flower larger.—The stem is from six to eight inches high, straight, stout, terminated by one, two or three flowers, hirsute, with long, lanuginose hairs, and others that are smaller, placed on a black base, which gives a roughness to the stem. Calyx oval; scales lanuginose, separate, dirty gray, a little viscid.—Native of Switzerland, Savoy and Dauphiné.

39. See variety β . of n. 30.

40. This is allied to the preceding in its habit and leaves, to *spicatum* n. 35 in its flowers, and to *amplexicaule* n. 26, in its glandular hairs. Stems from a foot to two feet in height, firm, villose, straight, with some axillary, subdivided branches. Leaves villose, with long hairs both simple and feathered; they are oblong, whitish, entire or slightly toothed, rounded at the base and stem-clasping. Flowers middle-sized, in a gray and blackish calyx. Native of Dauphiné. Perennial.

41. Root oblique, truncated, perennial. Stem from a foot to two feet in height, a little inclined at the base, terminated by two or three solitary flowers. The leaves vary much; their shining cinereous colour and pointed extremity are their most constant characters; they have a few long hairs, especially at their base and on their back, which are feathered; some of the same sort are on the stem, and on the upper part of it some others which are blacker. Calyx large and ash-coloured, with scales not divaricating, as in *H. villosum*, to which otherwise this is very nearly allied, but lanu-

^{*} Pollich, Woodw. Mss.

[†] Linn. succ.

[‡] Villars.

[§] Curt. lond.

^{*} Haller.

[†] Villars.

[‡] Pollich.

ginose or ash-coloured. Seeds small, black, short, channelled, and crowned by a sessile egret of brittle, toothed hairs, often elbowed at the base, as in *H. amplexicaule*. Native of Dauphiné, and the Alps, in the beds of torrents: also in Austria, if it be Jacquin's plant.

42. This species is intermediate between *H. porrifolium* and *murorum*. Leaves middle-sized, lanceolate, smooth, with black or brown spots, on a glaucous or ash-coloured ground, very slightly toothed. Stem firm, branched, a foot or eighteen inches in height, having little, oval, acuminate, sessile leaves at the division of the branches. Calyx ash-coloured. Flowers middle-sized. Native of Dauphiné.

43. Root very thick and deep, frequently forked at the upper part, perennial. Leaves oblong, three or four inches long, and six or eight lines wide, glaucous, tender, bright green, with a white nerve, and a few sinuities on the edge. Stem about a foot high, simple, or having two or three spreading branches about the middle, naked except a single leaflet under each branch. Flowers large, pale yellow or sulphur-coloured, as in *H. Pilosella*; turning green in drying. Native of Dauphiné, Piedmont, Switzerland.

44. Root thick, creeping, truncated, perennial. Leaves wide, cottony, ash-coloured. Stem thin, a few inches high, terminated by two or three flowers. There is a linear leaflet under each branch, and a scale or two near the calyx, which is smooth, or very rarely a little villose. Seeds blackish; their receptacle manifestly villose. Native of Dauphiné and Italy.

H. montanum. Scop. carn. n. 968. t. 50. seems to bear some relation to this plant.

45. Root thick, truncate, perennial, covered with russet membranes. Leaves wide, oblong, villose, with many long branched hairs. Stems slender, less villose, almost naked, half a foot high, terminating in five or six unequal thin long branches, each supporting one flower, a little larger than in *H. murorum*. The peduncles have two scales near the calyx, and one leaf at their base. The hairs of the calyx are in part glandular. Native of Dauphiné. Found also in the north of England, and commonly supposed to be a variety of *H. murorum*.

46. Root oblique, thick, perennial. Leaves oval, pointed, curled on the edge, which renders them concave upwards, like the bowl of a spoon; they have also sinuations more or less deep at their base; they are entirely white with the down that covers them; this is composed of hairs a line in length, with little branches on them at right angles with the main hair. Stem low, divided into two or three branches, which are of the same length with it, and divaricate. Each is terminated by a flower, like that of *Andryala lanata*, but smaller. The calyx and stem have hairs on them of the same kind. The receptacle is villose. Native of Dauphiné.

47. This plant is cottony, like the last, and small. It is distinguished by its lanceolate, toothed leaves. Native of Dauphiné.

These are nearly allied to *Andryala lanata*, which Villars makes a species of *Hieracium*.

48. Root thick, oblique, fibrous, truncated, perennial. Leaves like those of *H. murorum*, not sessile, however, but growing from a winged petiole, more or less cut; they are villose, but green, and pointed at the end. Stem also villose, of different heights, terminated by two or three flowers, like those of *H. murorum*, but larger. Calyx villose, blackish, with a few glandular hairs. Egret sessile, with simple hairs slightly toothed. Native of Dauphiné. Perhaps no more than a variety of *H. murorum*.

49. Root perennial. Stem straight, firm, from one to two feet in height. Leaves half-stem-clasping, all on the stem, which is simple; they are numerous, oval or lanceolate, villose, pale, toothed. Stem terminated by a bunch of from six to twelve flowers in a blackish calyx; they are of a middle size, as in *H. murorum*; to which, to *H. sabaudum* and *spicatum* this is somewhat allied. Native of Dauphiné.

50. Root perennial, oblique, thick, covered with scales. Root-leaves lanceolate, petioled, villose, dark green: stem-leaves two or three, sessile, toothed. Stem about a foot high, terminated by several middle-

sized flowers in a calyx; which is a little viscid. Native of Dauphiné, on walls.

It is probably only a variety of *H. amplexicaule*, which, as Allioni observes, varies remarkably in the length, breadth, thickness and toothing of the leaves.

51. Root perennial, long, oblique, simple, woody. Stem about a foot high, commonly divided into two, and sometimes into three, elongated, unequal peduncles, almost naked at bottom, but a little higher, having oblong, pointed leaves, of a russet colour, villose and toothed, or sinuated; they are three or four inches long, and about half an inch wide, but frequently narrower, and ending in a lanceolate point: they are very close, embrace half the stem with their rounded base, and stand out at right angles with the stem: of the two or three peduncles, one or two are straighter, or deviate less from the direction of the stem, are more villose, and have from four to six linear scales; they become blacker towards the calyx: the other is oblong, black, villose and scaly, the inner scales a little membranous on the edge. Flowers larger, reddish on the outside, pale yellow within. Seeds short, brown, crowned by a sessile egret of simple hairs, but toothed and russet. The whole plant is rough, of a yellowish green, covered with glandular hairs, that give it a disagreeable smell. Native of Dauphiné, and Savoy, on high mountains, in sunny pastures.

52. Root perennial, simple, thick, dividing at top into two parts, one of which produces a stem without leaves at the base, and the other a bundle of root-leaves without stem for the most part. Root-leaves oblong, pointed, sinuated with sharp teeth at the base, but wider, more entire, and lanceolate in the other parts. Stem-leaves clasping, with lateral earlets at the base, which turn back, and are often divided in two at the end. Stem a foot long, firm, thick, a little inclined at the base, grooved, and terminated by one, two, three, and even as far as fourteen pretty large flowers, which are all on separate peduncles, from an inch to two inches in length, clothed with russet hairs, which are often glandular, like those on the rest of the plant, and darker coloured, a little dilated at the end, where they have two little scales. Calyx black, scaly, covered with glandular hairs: the scales are unequal, the lower two or three, the upper twelve or thirteen; they make the calyx angular, always half closed, and they are black and ciliate on the back. Seeds oblong, channelled, russet, a little smaller at top; the outer ones frequently lying in the channel formed by the scales of the calyx. Crown sessile, composed of simple hairs of a snowy whiteness, and forming a very soft pencil. Receptacle a little alveolate. Native of Dauphiné, in alpine meadows.

This sort is in some degree allied to *H. amplexicaule* by its glandular hairs, and to the preceding by its deep roots; its leaves are in a just medium between them. It is distinguished by its beautiful egret, and by that approaches to the genus *Crepis*^b.

53. Plant about a foot high, with an upright stem, not putting out runners. Leaves narrow, sharp, covered with long hairs. Stem dividing in the middle. Calyx very smooth. Flowers small, heaped on the top of the stem^c. Perennial. Native of Switzerland, the Valais and Piedmont.

54. Root thick, black, perennial. Scape a hand in height, almost naked, simple, one-flowered. Calyxine leaflets ovate-lanceolate, smooth. Native of the county of Nice, about Sospello. It seems to rank between this genus and *Scorzonera*^d.

55. Root perennial. Leaves veined, somewhat like those of *Bupleurum*; the lowest on very long petioles, the others long-ovate, blunt, with scarcely any teeth, the upper ones clasping, but with short and very blunt hooks, the uppermost linear. Stem few-flowered, brachiate. Calyx black, hairy^e. Native of Switzerland and Piedmont.

PROPAGATION AND CULTURE.

Most of these plants are reputed to be weeds, and very few of them are cultivated, except in botanic gardens. If their seeds are permitted to scatter, they will in general propagate themselves, and being mostly

^b Villars.

^c Haller.

^d Allioni.

^e Haller.

perennial, they may also be increased by parting the roots.

N. 12, and 20, Orange-flowered and Gum-Succory Hawkweed have been long known in our gardens. N. 10, 25, 26, were cultivated by Mr. Miller near sixty years ago. A few others have been introduced since; as N. 19, 24, 27, 33, 34.]

They may all be propagated by seeds, which should be sown on an east aspect border in march; and when the plants come up, they must be kept clean from weeds, till they are strong enough to remove, which will be by the beginning of june; then they should be transplanted to a shady border of undunged ground, at six inches distance, observing to water them if the weather should prove dry, till they have taken new root; after which, if they are kept clean from weeds, they will require no other culture: in the autumn they should be transplanted where they are designed to remain; the following summer they will flower and produce ripe seeds, and the roots will continue some years, if they are not planted in a rich moist soil, which frequently occasions their rotting in winter.

They may also be propagated by parting the roots in autumn.

[**HIERACIUM.** See *Andryala*, *Apargia*, *Crepis*, *Hedypnois*, *Hyoseris*, *Hypochaeris*, *Lapsana*, *Leontodon*, *Pectis*, *Picris*, *Senecio*, *Seriola*, *Sonchus*, *Tragopogon*.

HIEROBOTANE. See *Veronica*.

HIEROCLOE. See *Holcus*.

HIGH-TAPER. See *Verbascum*.

HILLIA. (So named by Jacquin, in honour of Sir John Hill, M.D. author of many large works in Botany, other parts of Natural History, &c.)

Lin. gen. n. 444. Reich. 479. Schreb. 601. Jacqu. amer. 96. Swartz obs. 134.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Contortæ*.—*Rubiaceæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* double: lower six-leaved: leaflets opposite, unequal, oblong, entire: the two inner smaller, embracing the germ, deciduous, coloured: upper two to four-leaved; leaflets lanceolate, acute, erect, permanent.

COR. monopetalous. *Tube* cylindric, very long, striated, towards the border ventricose. *Border* six-cleft: clefts long, reflex, contorted, revolute.

STAM. *Filaments* six, very short, inserted below the border into the belly of the tube. *Anthers* oblong, two-celled, within the throat of the corolla.

PIST. *Germ* inferior, oblong, obscurely six-cornered. *Style* filiform, thick, the length of the tube. *Stigma* thickened, compressed, bifid.

PER. *Capsule* elongated, angular, two-celled, opening longitudinally into two valves, crowned with the leaflets of the upper calyx.

SEEDS numerous; pappose, round; a linear receptacle. Down capillary.

OBS. *H. tetrandra* takes away a sixth and a fifth part of the number.

ESSENTIAL CHARACTER.

Cal. double, lower six-leaved. *Cor.* very long, contorted. *Capsule* two-celled, two-valved, crowned. *Seeds* downy.

SPECIES.

1. *Hillia longiflora*.

Swartz prodr. 58. obs. 135. t. 5. f. 1.

H. parasitica. Lin. syst. 344. spec. 1662. Reich.

2. 110. Jacqu. amer. 96. t. 66. pict. 50. t. 97.

Corollas six-cleft, clefts lanceolate, revolute, leaves ovate, acute.

2. *Hillia tetrandra*.

Swartz prodr. 58.

Corollas four-cleft, four-stamened, clefts ovate, leaves obovate.

DESCRIPTIONS, &c.

1. This is a shrub, with an ascending stem, a fathom in height, branched, loose, smooth, brittle, covered with an ash-coloured, shining bark. Branches simple, leafy, round, smooth; brittle. Leaves opposite, decussated, spreading, entire, scarcely nerved, veinless, very smooth; somewhat rigid; on round, smooth; petioles.

Flowers terminating, sessile, solitary, very long, white, very sweet. Upper calyx two-leaved, sometimes but seldom four-leaved; the lower has from four to six leaves. Tube of the corolla three or four inches long; segments of the border an inch in length. Anthers whitish. Stigma clammy, dark green. Capsule from one to two inches long, slightly hexagonal, grooved. Seeds small, oblong, acuminate.

Native of Jamaica, in wet coppices on the mountains, not parasitical, but creeping among old mossy wood: flowering in summer^a. Also in Martinico; flowering in april^b.

2. This has a sixth and a fifth part less in the fructification than in the other sort. It is a shrub, native of Jamaica^c.

HINA-PARITI. See *Hibiscus mutabilis*.

HIPPIA.

Lin. gen. Reich. n. 1077. Schreb. 1343. Gærtn.

t. 164. Juss. 184.

Class. 19. 4. Syngenesia Polygamia Neceffaria.

Nat. order of *Compositæ Discoideæ*.—*Corymbiferae*, Juss.

GENERIC CHARACTER.

CAL. *Common* hemispherical, somewhat imbricate, with ovate scales.

COR. *Compound*, discoid: floscules male, several in the disk; females ten in the circumference. *Proper* of the Males funnel-form, five-cleft, upright: of the Females obsolete, tubulous, two or three-cleft.

STAM. In the males, *Filaments* five; very short. *Anther* cylindric, shorter.

PIST. In the females, *Germ* margined, large. *Style* bifid. *Stigmas* upright.

PER. none. *Calyx* unchanged.

SEEDS. In the Females oval, with a very wide rim all round, naked.

REC. naked.

ESSENTIAL CHARACTER.

Cal. hemispherical, subimbricate. *Corollets* of the ray ten, obsolete, subtrifid. *Seeds* with very broad margins, naked. *Down* none. *Recept.* naked.

SPECIES.

1. *Hippia integrifolia.* Annual *Hippia*.

Lin. syst. 795. suppl. 389. Ait. hort. kew. 3. 278.

Sphaeranthus africanus. Burm. ind. 185. t. 60. f. 2.

Hispid, erect, leaves ovate, serrate, five-nerved, racemes terminating.

2. *Hippia minuta.* Minute *Hippia*.

Lin. syst. 795. suppl. 389.

Herbaceous, procumbent, creeping, smooth, leaves pinnate, peduncles axillary, one-flowered.

3. *Hippia frutescens.* Shrubby *Hippia*.

Lin. syst. 795. suppl. 390. mant. 291. syst. ed.

13. 661. Reich. 3. 938. Gærtn. fruct. 2. 390.

Ait. hort. kew. 3. 278.

Eriocephalus, pectinifolius. Lin. syst. ed. 12. 579.]

Tanacetum frutescens. Lin. spec. 1183. hort. cliff.

398. Berg. cap. 243. Mill. dict. n. 4. Comm.

hort. 2. 201. t. 101.

Shrubby, villose, leaves pinnatifid, flowers corymbed.

DESCRIPTIONS, &c.

[1. This has the flowers of *Hippia*, with the herb of *Urtica*. Native of the East-Indies^d. Introduced in 1777, by Mons. Thouin^e.

2. Stems procumbent, jointed, putting out rooting fibres at every joint. Leaves alternate, of the same form as in the third sort; at the joints opposite, or frequently in threes: petioles dilated at the base, stem-clasping. Peduncles bent down, filiform, longer than the leaves. Flowers small. Calyx simple, seven-leaved, with ovate-oblong scales. Florets of the ray fertile; of the disk barren, few. Seeds of the ray obovate, longitudinally margined on each side, bifid at the tip. Receptacle naked. Found in South America by Mutis^d.]

3. Stem shrubby, eight or ten feet high, sending out branches on every side the whole length. Segments of the leaves lanceolate, entire, blunt. The flowers are produced in small roundish bunches at the ends of the branches; they are of a sulphur colour,

^a Swartz.

^b Jacquin.

^c Swartz.

^d Linn. suppl.

^e Hort. kew.

and appear in may, but there is a succession of flowers on the same plant great part of the summer.

[Scales of the calyx oblong, pressed close, membranaceous at the edge. The female corollets are continuous with the outer integument of the seed, exactly as in *Tarchonanthus*, and not separate from it. Receptacle flattish, naked, with little depressed teats, having a hollowed dot in the middle, scattered over it. Seeds in the circumference only, elliptic, with a point at top formed by the dried corollet, narrowed towards the base, concavo-convex, extenuated into a sort of wing at the sides, pale and bald^f. Native of the Cape of Good Hope. Cultivated by Mr. Miller in 1731^g.

Linneus originally made this a species of *Tanacetum*, when he published the twelfth edition of the *Systema* (1767) the structure of the fructification appeared to him to be so nearly allied to *Eriocephalus*, as scarcely to merit a separate genus. In 1771, however, when the *Mantissa* was printed, he thought that it approached nearer to *Iva* than *Tanacetum*, but was distinct from both, and gave it the name of *Hippia*.]

PROPAGATION AND CULTURE.

3. The seeds rarely ripen in England; but it is easily propagated by cuttings, planted in a bed of loamy earth, during any of the summer months. Shade them from the sun until they have taken root, and refresh them frequently with water. Take them up with balls of earth about their roots, plant them in pots, and place them in a shady situation until they have taken new root; then remove them to a sheltered place, among other hardy exotics, and in october put them into shelter. This plant, requiring only protection from frost, must not be too tenderly treated.

HIPPOCASTANUM. See *Æsculus*.

HIPPOCRATEA. (So named by Plumier in memory of Hippocrates the famous Greek Physician and father of Medicine.)

Lin. gen. n. 54. Reich. 60. Schreb. 73. Jacq. 9.

Juss. 251.—Coa. Plum. 35.

Class. 3. 1. Triandria Monogynia.

Nat. order of Acera, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, five-parted, very small: *leaflets* roundish, spreading, incumbent, smaller than the corolla.

COR. *Petals* five, ovate, spreading, permanent, excavated at the tip, villose.

STAM. *Filaments* three, contiguous to the germ and style, awl-shaped, reflex at the tip. *Anthers* roundish, with a transverse groove.

PIST. *Germ* roundish. *Style* three-sided, awl-shaped, longer than the stamens. *Stigma* blunt.

PER. *Capsules* three, obcordate or elliptic, compressed, large, with two-valved cells; valves keeled and compressed.

SEEDS in fives or sixes, oblong, with a membranaceous wing; at first soft, but afterwards hardening like nuts, with oblong kernels.

ESSENTIAL CHARACTER.

Cal. five-parted. *Pet.* five. *Caps.* three, obcordate or elliptic.

SPECIES.

1. *Hippocratea volubilis.*

Lin. spec. 50. syst. 83. Reich. 1. 96. hort. cliff. 484. Swartz obs. 28. prodr. 17.

H. scandens. Jacq. amer. t. 9. pict. 10. t. 12.

Coa scandens. Plum. gen. 8. ic. 88.

[*Racemes corymbed, leaves ovate-lanceolate, serrate.*

2. *Hippocratea comosa.*

Swartz prodr. 17.

Bejuco pendulus, flor. paniculatis. Loeßl. itin. 314.

Panicles comose, peduncles multifid, capillary, leaves ovate, acuminate, entire.

DESCRIPTIONS, &c.

1. This is a scandent plant (not twining, whence Linneus called it *volubilis*); Jacquin therefore changed the name to *scandens*.] Mr. Miller says it grew with him to the height of eight or ten feet, twining round stakes with very slender stalks.

[Branches subdivided, bent down, with opposite, rigid, arched, spreading branchlets. Leaves petioled, opposite, blunt, stiffish, smooth. Racemes terminating, with opposite racemelets; flowers terminating, subsessile, crowded, greenish white, minute. Capsules an inch long. Seeds compressed, dry, in the other sort as big as nuts^a.

Native of Carthage in New Spain, and several of the West-India islands.] Mr. Miller had it by Mr. Robert Millar from Campeachy. [Swartz says it flowers in spring. Jacquin saw it flowering both in april and december, and gathered the fruit in july. He informs us, that in the dry season, when all the trees lose their leaves, this plant, with the *Capers* and a few others, continue flourishing.

2. Native of Hispaniola.

PROPAGATION AND CULTURE.

1. It is propagated by seeds brought from South-America or the West-Indies. Jacquin informs us that they corrupt very soon, and that therefore we can hardly expect to raise plants from seeds sent to Europe. If so, they should be sown whilst fresh, and sent over in pots or tubs.] Mr. Miller, however, raised several plants from seed, which lived two years, but did not flower. He thinks that they were rotted by having too much wet, and recommends the giving them little water in winter. They are very tender, and must be kept constantly in the bark-bed in the stove.

HIPPOCREPIS. (*ἵππου κρηπίς*, Horse-shoe, from the form of the legume or pod.)

Lin. gen. n. 885. Reich. 958. Schreb. 1200. Juss.

361.—Ferrum equinum. Tournef. 225.

Class. 17. 4. Diadelphia Decandria.

Nat. order of Leguminosæ or Papilionaceæ.

GENERIC CHARACTER.

CAL. *Umbel* simple. *Perianth* one-leaved, five-toothed (the upper toothlets joined, and less divided), permanent.

COR. *Papilionaceous*: banner heart-shaped, with a claw the length of the calyx: wings ovate-oblong, blunt: keel lunulate, compressed.

STAM. *Filaments* diadelphous (simple and nine-cleft) ascending. *Anthers* simple.

PIST. *Germ* slender, oblong, ending in a subulate, ascending *Style*. *Stigma* very simple.

PER. *Legume* compressed and membranaceous, very long, curved inwards, one of the futures many times cut almost to the top into roundish sinuses; and hence consisting of several joints, obtusely triangular, connected by the upper future.

SEEDS solitary in each joint, oblong, incurved.

OBS. The essential character consists in the horse-shoe form of the legume.

ESSENTIAL CHARACTER.

Legume compressed, several times emarginate along one of the futures, curved.

SPECIES.

1. *Hippocrepis unifiliquosa.* Single-podded Horse-shoe Vetch.

Lin. spec. 1049. syst. 670. Reich. 3. 496. hort. cliff. 364. upf. 233. Sauv. monsp. 236. Gron. orient. n. 229. Mill. fig. t. 278. f. 1. Allion. pedem. n. 1250.

Ferrum equinum. Lob. adv. 403. Ger. 1056. f. 3. emac. 1235. f. 8. Raii hist. 930.—majus. Park. theat. 1091. f. 1.—siliqua singulari. Bauh. pin. 349. Garid. t. 114. Mær. hist. f. 2. t. 10. f. 1.—vulgare. Col. ecphr. 1. 302. t. 300. Rivin. tetr. t. 98.—sil. solitariis lunatim excisis. Hall. herb. n. 392.

Sferra cavallo. Casalp. syst. 249.

Legumes sessile, solitary, straight.

2. *Hippocrepis multifiliquosa.* Many-podded Horse-shoe Vetch.

Lin. spec. 1050. Reich. 3. 496. hort. cliff. 364. upf. 233. Sauv. monsp. 239. Millars dauph. 3. 400. Ait. hort. kew. 3. 60. Mill. fig. t. 278. f. 2. Allion. pedem. n. 1251.

^f Gartner.

^g Hort. kew.

^a Swartz.

Ferrum equinum siliqua multiplici. *Baub. pin.* 346.
—polyceraton. *Col. ecphr.* 1. t. 300. *Park. theat.*
1091. n. 3.

Legumes peduncled, crowded, circular, smooth, lobed on the outer margin, leaves and calyxes smooth.

[3. *Hippocrepis balearica.* *Shrubby Horse-shoe Vetch.*
Lin. syst. 671. *Jacqu. ic. miscell.* 2. 305. *Ait. hort. kew.* 2. 61.

Legumes peduncled, crowded, smooth, lobed on the outer margin, leaves and calyxes somewhat hairy, stems ancapital.]

4. *Hippocrepis comosa.* *Tufted Horse-shoe Vetch.*
Lin. spec. 1050. *syst.* 671. *Reich.* 3. 496. *mant.*
445. *hort. cliff.* 364. *Huds. angl.* 321. *Wither.*
arr. 783. *Relb. cant. n.* 531. *Engl. bot. t.* 31.
Scop. carn. n. 915. *Pollich pal. n.* 693. *Neck.*
gallob. 310. *Jacqu. austr.* 5. 14. t. 431. *Villars*
dauph. 3. 399. *Allion. pedem. n.* 1252. *Krock.*
files. n. 1191.

Ferrum equinum siliquis umbellatis undulatis. *Hall.*
helv. n. 391.—*germanicum sil. in summitate.* *Baub.*
pin. 346. *Raii hist.* 930. *syn.* 325.—*comosum.*
Col. ecphr. 1. 302. t. 301. *Park. theat.* 1091. n. 4.
Riv. tetr. 1. 97. *Mor. hist. f.* 2. 1. 10. f. 3.

Ornithopodio affinis, &c. *Baub. hist.* 2. 348. 1.
Legumes peduncled, crowded, arched, rugged, sinuated on both margins.

[5. *Hippocrepis barbata.* *Bearded Horse-shoe Vetch.*
Lour. cochinch. 453.

Legumes straight, spike oblong, terminating.

DESCRIPTIONS, &c.

These are small herbaceous plants, with unequally pinnate leaves, and small stipules. Peduncles axillary and terminating, one or many-flowered, in umbels. Corollas, except the last, yellow. Claws of the petals as long as, or longer than the calyx.]

1. This is an annual plant, which sends from the root several trailing stalks a foot long, that divide upwards into smaller branches. Leaves pinnate, composed of four or five pairs of narrow small leaflets, terminated by an odd one, which are obtuse, and indented at their ends; from the wings of the stalk come out single flowers, which are yellow, and succeeded by single pods fitting close to the stalks, which are about two inches long, and a third of an inch broad, bending inwards like a sickle, and divided into many joints shaped like a horse-shoe. This flowers in June and July, and the seeds ripen in the autumn, soon after which the plants decay.

[Native of Italy, and other parts of the South of Europe. Observed by Ray near Leghorn and Naples; and by Rauwolf near Tripoli.—It was cultivated here by Gerarde in 1596; and sooner, namely in 1570, according to Lobel^a.]

2. This is also an annual plant, with trailing stalks like the preceding; to which it has great resemblance; but the flowers of this are produced upon long, axillary peduncles. They are small, yellow, and many clustered together. Pods narrower than those of the preceding sort, more incurved, and the outer border divided into lobes. It flowers and ripens its seeds about the same time with that.

[Native of the South of Europe. Cultivated in 1739, by Mr. Miller^b.

3. Root short, woody, the thickness of a finger. Stems ascending, or rather procumbent, shrubby and perennial at bottom. Leaves pinnate, smooth; leaflets about eight on each side, with an odd one, oblong, quite entire, blunt, with a scarcely conspicuous point, sessile. Peduncles round, slightly striated, smooth and long, terminating in a many-flowered umbel, as in *H. comosa*. The flowers have a small degree of sweetness. Calyx pale green, loose, bilabiate half way; upper lip straight and bifid half way; lower three-toothed, the two lateral teeth ascending, all acuminate, and almost of the same height. Corolla yellow: banner rounded, quite entire, striated, ascending at a right angle from a long channelled claw, with the edges revolute; wings obovate, very blunt, wide, almost the length of the banner; keel paler, sickle-shaped, shorter than the

wings, ascending, acuminate, with a very slender bifid claw. Legumes oblong, blunt, straightish or a little incurved, once, twice, or thrice sinuated on the upper future, smooth and brownish. Seeds shining, brown, cylindric, bowed, blunt^c.

Native of Minorca. It flowers in May and June, and was introduced in 1776, by Monf. Thouin^d.

Murray observes, that it so resembles *H. comosa*, as to make it difficult to find any limit between them^e.

4. Root perennial, thick, woody, fibrous, yellow on the outside, white within. The whole plant is smooth. Stems trailing, ascending, grooved, from two to nine inches long, much branched. Leaves alternate, frequently coming out in bundles from the tops of the younger branches, the larger ones six inches long, and scarcely an inch broad, unequally pinnate: leaflets four or five pairs, sometimes six, seldom more, opposite (sometimes not quite so), ovate (according to Linneus, oval-linear) retuse, toothed (Pollich says, quite entire), having a very short reddish spinule at the end, bright glaucous green underneath, subpetioled; the largest are near half an inch long, and two lines wide. Stipules in pairs, awl-shaped, reddish, as it were decurrent. Peduncles axillary, round, grooved, from two to five inches long, two or three from the upper axils, and one terminating. Flowers six to eight or ten, disposed in a circle round the top of the peduncle, after flowering bent down; pedicels slightly hairy, very short, with a small, ovate, white, bifid bracte at the base of each. Calyx small, striated, slightly pubescent; teeth short, the two upper distant from the lower, spreading, less deeply divided. Corolla yellow: standard ovate, blunt, smooth, reflex at the end, and along the edges, marked with brown veins, four lines long, and rather more than two lines wide, with a long gaping claw at right angles with the border; (Linneus describes it as somewhat arched, striated underneath, not bent back at the edges, only at the base, which being retuse, there seems to be a pore as it were on each side:) wings ovate, blunt, a little longer than the keel, the same length with the standard, (or a little shorter), more than a line in width, with narrow claws close to the keel, and enfolded with it: keel bluntish, whitening with age, arched, with a double, narrow claw. Legumes about an inch long, compressed, lobed on both sides, the lower future having about eight sinuses^f.

In German *Hufeisenpflanze*. In Dutch, *Hoefzyzer*. In Danish, *Hestesko*. In Swedish, *Hatsko*. In French, *Fer-à-cheval*. In Italian, *Ferro di cavallo*. In Spanish, *Hierba de la Herredura*, *Herradura de caballo*. In Portuguese, *Ferradurina*, *Esferro cavallo*.

Native of Germany, Italy, France, Austria and England, in calcareous soils; flowering from April to July.

5. Stem suffruticose, four feet high, upright, round. Leaves ovate, quite entire, smooth, ternate, the middle leaflet largest. Flower purple, terminating in an oblong dense spike. Legume peduncled, upright, flat, bearded, the outer future several times and deeply emarginate. Seeds square-kidney-shaped, small, compressed. Native of Cochinchina^g.]

PROPAGATION AND CULTURE.

These plants are propagated by seeds, which should be sown in the autumn, where the plants are designed to remain; and when the plants come up, they must be kept clean from weeds, and thinned where they are too close, which is all the culture they require. The two annual sorts will decay in the autumn after they have perfected their seeds, but the roots of the third will continue two or three years, provided they are not in too good ground.

[The third sort must be kept in the green-house, and the fifth has not been introduced in Europe.]

HIPPOGROSTIS. See *Panicum*.]

HIPPOLAPATHUM. See *Rumex*.

HIPPOMANE. (*ἵππομανής*; the name of a plant supposed to make horses furious; from *ἵππος*, a horse, and *μανία*, madness.

^a Jacquin.

^d Hort. kew.

^e Syst.

^f Pollich, Linn. Relh. Woodw. Mss.

^g Loureiro.

^a Hort. kew.

^b Ibid.

"Ιππομανες φυτόν ἐστὶ παρ' Ἀρκασί, τῷ δ' ἐπὶ πᾶσι
 "Καὶ πολλοὶ μαινοῦνται ἀν' ὤρεα καὶ θοαὶ ἵπποι." Theocr.)

Lin. gen. n. 1088. Reich. 1186. Schreb. 1471.

Loefl. Jacqu. Juss. 391.

Mancanella. Plum. 30.

Class. 21. 8. Monoecia Monadelphia.

Nat. order of *Tricoccæ*.—*Euphorbiæ*, Juss.

GENERIC CHARACTER.

* Male flowers in a terminating ament.

CAL. Perianth one-leafed, roundish, bellying; with the mouth converging, emarginate.

COR. none.

STAM. Filament single, filiform, twice as long as the calyx. Anthers four, roundish, fixed crosswise to the sides of the filament towards the tip.

* Female flower solitary, terminating, in the same plant.

CAL. Perianth three-leaved, withering: leaflets roundish, concave, blunt, converging.

COR. none.

PIST. Germ. ovate, large. Style very short. Stigma slightly seven-cleft, sharp, reflex.

PER. Drupe globular, very large, one-celled, crowned with the permanent stigmas; or a tricoccous capsule.

SEED. Nut woody, irregular, acuminate, excavated with little pits and apophyses, seven-celled, seven-valved: kernels solitary, roundish.

ESSENTIAL CHARACTER.

MALE. Ament. Perianth, bifid. Cor. none.

FEM. Perianth trifid. Cor. none. Stigma three-parted. Drupe or Capsule three-grained.

SPECIES.

1. Hippomane Mancinella. Manchineel Tree.

Lin. spec. 1431. Syst. 866. Reich. 4. 195. hort. cliff.

484. Swartz obs. 369. Jacqu. amer. 250. t. 159.

piet. 122. t. 238. Brown. jam. 351. 1.

Mancanilla pyri facie. Plum. gen. 50. Catesb. car. 1.

t. 95.

Juglandi affinis, &c. Sloan. jam. 2. 3. t. 159.

Malus americana, &c. Comm. hort. 1. 131. t. 68.

Arbor venenata Mancinello dicta. Raii hist. 1646.

Pluk. phyt. t. 142. f. 4.

Leaves ovate, serrate, biglandular at the base.

2. Hippomane biglandulosa. Gum Tree.

Lin. spec. 1431. Syst. 866. Reich. 4. 196. Swartz obs. 370.

Sapium. Brown. jam. 338.

Mancanilla lauri foliis oblongis. Plum. gen. 50. ic. 171. f. 2.

Laurifolia arbor venenata, &c. Sloan. jam. 1. 39.

Tithymalus arbor, &c. Pluk. phyt. t. 229. f. 8.

Leaves ovate-oblong, biglandular at the base.

3. Hippomane spinosa.

Lin. spec. 1432. Syst. 866. Reich. 4. 196.

Mancanilla aquifolii foliis. Plum. gen. 50. ic. 171. f. 1.

Ilex aquifolii folio americana. Pluk. phyt. t. 196.

Leaves subovate, tooth-jpiny.

DESCRIPTIONS, &c.

1. The Manchineel tree is very large in the West-Indies, almost equalling the Oak in size. [Jacquin says, it is a lofty large tree, with a very branching spreading head, having something the air of a Pear-tree. According to Swartz, the trunk is of a middling size, with a gray, even, thick, milky bark, and a hard wood which is yellowish, with gray or blackish veins. Leaves rounded at the base, acuminate, crenate, two inches in diameter, thickish, dark green, shining, paler underneath, milky, nerved; on petioles from twelve to fifteen lines in length, margined. Flowers in aments or spikes. Aments clustered, terminating, from one to two inches in length; males several, females few, distinct, inserted at the base, or quite distinct from the males, and lateral. Male flowers three or four in an ament: common perianth one-leafed, blunt; proper two-parted, turbinate, with blunt, minute teeth. Filaments one, two, three, four, connate at the base, longer than the calyx: anthers roundish, twin. Females, perianth trifid, minute, caducous; style none, stigmas three, two-parted, acute, reflex. Fruit a drupe, the colour, size and form of an Apple, smooth, with a soft spongy flesh, a sweet smell, and an insipid caustic taste.

Within is a nut with from three to five cells, with a single seed in each, which is three-cornered, covered with a shining silvery skin, and having the taste of a hazel nut^a.] Miller says, the fruit is about the size and shape of a golden Pippin, and turns yellow when ripe. [It drops from the tree in great quantities; not rotting, but drying up, and does not seem to be eaten by any animal, except, perhaps, by a species of crab, which resorts to these trees in incredible quantities, probably rather for shelter than for food^b. Dr. Patrick Browne affirms, that he has known many people who have ignorantly eat of this fruit, which they had taken for crab-apples: they generally vomited in a short time, and continued to complain of a burning heat in the mouth, throat and stomach, for many hours after. The juice of the buds of the white Cedar is esteemed an antidote to this poison, and is generally used with some success; but oily mixtures and emulsions are the most effectual assistants, and seldom fail giving relief soon. He adds, that he never knew any to die by this poison, though he has seen some who have eat nine or ten of the apples at a time.—Long says, that though the green fruit may be destructive in considerable quantity, yet it may be taken in small quantity without danger, and is too disagreeable, from its acrimony, to excite any desire of eating it. When ripe, it is too insipid to raise any pleasure. He adds, that goats, sheep and macaws feed greedily on it, in this state^c.

The first accounts of this tree were very much exaggerated. It was said to be dangerous to sit or lie under it, and that the rain which falls from the leaves will raise blisters in the skin. Professor Jacquin informs us, that he and his companions reposed upwards of three hours under a Manchineel tree, without receiving any injury; and that he experienced rain dropping from the leaves to be perfectly innocent. Long also says, that the Negroes do not suffer any inconvenience from drops of the juice accidentally falling on their skin, when felling this tree, or hacking off the limbs; but that if it chance to fly into their eyes, it will give them a severe pain for several hours: and Jacquin affirms, from his own experience, that a drop of that milky juice, with which the whole tree abounds, falling on any part of the hand, except the palm, will immediately raise a blister.

The wood of this tree is frequently of a fine grain, and very beautifully clouded; and, taking a fine polish, is much esteemed in the West-Indies for making cabinets, book-cases, &c. It is very durable, and not subject to be eaten by the worm. The wood-cutters make a fire round the body of the tree before they venture to fell it, to avoid the danger of losing their sight by the caustic juice flying into their eyes. If the juice fall upon linen, it will turn it black, and on being washed will come into holes. If any of the saw-dust happens to get into the workmen's eyes, it causes an inflammation; to prevent which, they generally cover their faces whilst they are working the wood.

[The Indians are said to poison their arrows with the juice of this tree^d: and it exudes a gum, which has been given medicinally instead of Gum Guaiacum^e.

The Manchineel tree is common on the sandy coasts of America and the West-Indies, generally growing at some small distance from the surf. It flowers in may, and the fruit ripens in july.—Mr Miller cultivated it here in 1739^f.

The European nations have, with little variation adopted the Spanish name *Mancanilla*, which signifies a little apple^g.

2. This tree is from twenty to fifty feet high, with an even brownish ash-coloured bark. Leaves on young trees frequently a foot long, but on older ones shorter they are blunt, crenate-serrate, of a firm substance and bright green. Spikes terminating and lateral clustered, rather to be called aments. A single ament

^a Swartz obs.

^d Browne.

^b Jacquin.

^c Long.

^g Jacquin.

^e Jamaica, 838.

^f Hort. kew.

of male flowers, at the beginning of the flowering-time, springs among other small ones, flowers and falls: thick scales like glands cover the ament, commonly a pair opposite to another pair, ovate, thick, pressed close, adnate. Perianth from the sinus of two scales, tubular, irregularly four-cleft, blood red: Filaments two; connate at the base, reflex, longer than the calyx, blood red: anthers twin, open at the upper edge; pollen yellow, with the atoms oblong, when viewed with a glass appearing to have two pellucid streaks. After almost a month, the first ament falling and leaving a scar, the smaller aments of the base are elongated and flower, producing male flowers at top, and female flowers below. The scales and male flowers as in the other. The females have two scales to each flower, embracing the germ. Calyx trifid, two segments above the scales at the sides, the other behind. Germ ovate, fastened to the ament behind: style three-parted: stigmas thick; simple. Capsule oblong, slightly three-cornered, at length tricoccous, small, three-celled, three-valved. Seeds orbiculate, smooth, solitary^b.

Native of the continent of America and the West-India islands, on mountains: flowering in march and september.

The whole tree yields a great quantity of milky juice, which becomes a resin or gum of a thick sticky consistence, dirty colour, opaque, and of little or no smell: this generally serves for the boiling-house lamps, in every part of the country where the tree is frequent; and is much used for bird-lime. The wood is soft and coarse, and not much esteemed^c; it is used, however, for making hoghead staves^k.

Sapium aucuparium of Jacquin, amer. 249. t. 158. pict. t. 237., which he supposes to be the same as this, seems to be a different plant, having longer, more acuminate, serrate leaves, subcartilaginous-beaked at the tip, with subsolitary spikes.—H. biglandulosa of Aublet, guian. 885. is the same with this of Jacquin^l.]

3. This is of humbler growth, seldom more than twenty feet high: the leaves greatly resemble those of the common Holly, and are set with sharp prickles at the end of each indenture; they are of a lucid green, and continue all the year.

Native of South America. Mr. Miller had these two from Dr. Houstoun, who found this at Campeachy, and the preceding at Carthagenia in New Spain.

PROPAGATION AND CULTURE.

These plants are preserved in some of the curious gardens in Europe, where they can never be expected to rise to any great height, for they are too tender to live in these northern countries, but in stoves; they rise easily from seeds, provided they are good. The seeds must be sown upon a good hot-bed, and when the plants come up, they should be each planted in a small separate pot filled with light sandy earth, and plunged into a good bed of tanner's bark, treating them in the same way as other tender plants; but they must not have much wet, for these plants abound with an acrid milky juice, and it is certain that most plants which do, are soon killed by much moisture: these plants must be removed into the stove, and plunged into the tan-bed in autumn, where they should constantly remain, giving them very little water in winter; and in summer when the weather is warm, they should have a good share of air admitted to them, and once or twice a week refreshed with water; by this management I have raised many of these plants to the height of five or six feet, which have, by their shining green leaves, made a pretty variety during the winter season in the stove.

[HIPPOMANE. See Hura.

HIPPOMARATHRUM. See Cachrys & Sefeli.]

HIPPOPH E. (ἵπποφαεις or ἵπποφύεις, the name of a shrub in Theophrastus and Dioscorides; Hippophyes of Pliny. It is differently written, and is derived from ἵππος, and either φάω or φύω)

Lin. gen. n. 1106. Reich. 1210. Schreb. 1509.

Gartn. t. 42. Juss. 75.

Rhamnoides. Tournef. 481.

^b Swartz.

^c Browne.

^k Long.

^l Swartz.

Class. 22. 4. Dioecia Tetrandria.

Nat. order of Calycifloræ.—Elaeagni, Juss.

GENERIC CHARACTER.

* Male.

CAL. Perianth one-leafed, two-parted, two-valved, with the bottom entire: the parts roundish, blunt, concave, upright, converging at the tips, and gaping on the sides.

COR. none.

STAM. Filaments four, very short. Anthers oblong, angular, almost the length of the calyx.

* Female.

CAL. Perianth one-leafed, ovate-oblong, tubular, club-shaped, with the mouth cloven, deciduous.

COR. none.

PIST. Germ roundish, small. Style simple, very short. Stigma thickish, oblong, upright, twice as long as the calyx.

PER. Berry superior, subglobular, one-celled.

SEED single, oblong, hard, shining.

OBS. Hermaphrodite flowers have sometimes been observed among the males.

ESSENTIAL CHARACTER.

MALE. Cal. two-parted. Cor. none.

FEM. Cal. bifid. Cor. none. Style one. Berry one-seeded.

SPECIES.

1. Hippophae Rhamnoides. Common Sea Buckthorn.

Lin. spec. 1452. Reich. 4. 242. fl. lapp. n. 372.

Suec. n. 906. hort. cliff. 454. Gartn. fruct. 1. 199.

Hudf. angl. 431. Wither. arr. 1114. Hall. herb.

n. 1603. Fl. dan. t. 265. Gann. norv. n. 14.

Pallas. rofs. 1. 2. 43. t. 18. Allion. pedem.

n. 2120. Du Roi barbk. 1. 306. Dubam. arb.

1. 211. t. 49.

Oxyris rhamnoides. Scop. carn. n. 1216.

Rhamnus salicis folio angusto; fructu flavescente.

Bauh. pin. 477. Raii hist. 1592.

R. 2. Clus. hist. 1. 110. 1. Ger. eniac. 1334. 2.

Dod. 755. 1.

R. primus Dioscoridis Lobelio, (obs. 598. 3. ic.

2. 180. 1.) f. littoralis. Park. theat. 1006. 1.

R. f. Oleaster germanicus. Bauh. hist. 1. 6. 33. Cord.

hist. 3. c. 24. p. 186.

Rhamni species. Camer. epit. 81.

R. alterum genus. Casalp.

Hippophae Dioscoridis forte. Col. expbr. 1. 37.

Rhamnoides folio salicis, baccis leviter flavescentibus.

Tournef. cor. 53. Raii syn. 445.

Leaves lanceolate.

[2. Hippophae canadensis. Canadian Sea Buckthorn.

Lin. spec. 1453. Reich. 4. 243.

Leaves ovate.]

DESCRIPTIONS, &c.

1. The Sea-Buckthorn or Sallow-Thorn rises with shrubby stalks eight or ten feet high, sending out many irregular branches, which have a brown bark silvered over. Leaves narrow or linear-lanceolate, about two inches long, and a quarter of an inch broad in the middle, of a dark green on their upper side, but hoary on their under, with a prominent midrib; the borders are reflexed, as in the Rosemary; they are placed alternate on every side the branches, and sit close to them; [there are little, clustered, peltate, ciliate, pale scales scattered over them^a. The branches spread wide, are straight, stiff, and thorny at the ends; the lesser ones numerous, scattered, short and spreading^b. Flowers solitary, appearing before the leaves, generally abortive, unless the shrub grows in its natural situation. Male flowers below the leaves, between a branch and a one-valved, permanent bud, the length of the flower. The female flowers are sessile in the axils of the lower leaves^c. The male flowers are subsessile, somewhat spiked, disposed in four rows along the lesser branches; the peduncles are cylindrical: bractes oblong, concave, spreading, as long as the calyx, reddish brown, somewhat fleshy, falling off with the flowers, sprinkled with scales similar to those on the leaves, circular, membranous and reddish brown. The calyx has also scales sprinkled over the outside of

^a Linn. spec.

^b Stokes in With.

^c Linn. spec.

it. Filaments upright, inserted in the bottom of the calyx: anthers two-celled, four-valved, brownish yellow, after shedding their dust stiff and angular; dust or pollen nearly globular, angular, brownish yellow, opaque, but when moistened with water globular and transparent^d.

The flowers come out from the branchlets of the former year. The berries are very abundant, on short peduncles, ovate (or ovate-globular), mucronate with the style, yellow when ripe^e, succulent, smooth, sprinkled here and there with callous dots; the cell is cloathed with a very thin membrane, cohering with the style. Seed oblong, attenuated below, somewhat compressed, marked on each side by a depressed longitudinal line, very smooth and black^f.

The berries are gratefully acid, and are much eaten by the Tartars. They are also the principal food of pheasants about mount Caucasus^g. The fishermen of the gulph of Bothnia prepare a rob from them, which imparts a grateful flavour to fresh fish. In sunny sandy situations this shrub is planted for hedges; it is used for dyeing yellow. Kine refuse it, goats, sheep and horses eat it^h.

Native of many parts of Europe on sandy sea coasts. In England, near Sandwich, Deal, Folkestone, and the isle of Shepey in Kent; Canvey island in Essex; Cley and Sheringham cliffs, and between Yarmouth and Winterton in Norfolk; Lincolnshire; Whitby and Lyth in Yorkshire.

It flowers in april and may. Ray says, june, and Miller, july.

It varies with red berries.] Miller says, that he has observed it only with yellow berries in England, but that he had seen it on the sand-banks in Holland with red berries.

[This shrub is named in German *Haftdorn*; in Dutch, *Duinbeffen*; in Swedish and Danish *Haftorn*; in French *Argoussier*; in Spanish *Espino amarillo*; in Russian *Rakitnik*.

2. This has the appearance of the former sort; but the leaves are broader, only half the length, of an ovate or oblong-ovate form; on the upper surface they are green, with diverging hairs, in bundles, scarcely to be discerned by the naked eye: on the lower they are silvery with hairs and scales, and have rust-coloured dots scattered over them. The branches are opposite; and the racemes simple among the first leaves, upright, and shorter by half than the leaves.—Native of Canadaⁱ.]

PROPAGATION AND CULTURE.

These shrubs may easily be propagated by suckers from the root, taken off in autumn, and transplanted into a nursery. After one year's growth, they will be fit to transplant where they are to remain. They may also be increased by layers, but the roots spread, and put up such abundance of suckers, that there is no necessity to be at this trouble. There being little beauty in these shrubs, it will be sufficient to have one or two of them in plantations.

[HIPPOPHÆSTUM. See *Centaurea Calcitrapa*.

HIPPOPODIUM. See *Buxbaumia*.]

HIPPOSELINUM. See *Smyrniolum*.

[HIPPURIS. (ἵππουρις of *Dioscorides*; Hippuris of *Pliny*: from ἵππος a horse, and οὐρα a tail.)

Lin. gen. n. 11. Reich. 11. Schreb. 15. Gærtn.

t. 84. Juss. 18. Hellen. monogr. Limnopeuce.

Vaill. mem. acad. 1719. Pinastella. Dill. 168.

Class. I. 1. Monandria Monogynia.

Nat. order of *Inundatæ. Naiades*, Juss.

GENERIC CHARACTER.

CAL. a two-lobed rim, crowning the germ.

COR. none.

STAM. Filament one, upright, placed within the anterior lobe of the calyx. Anther roundish, compressed.

PIST. Germ oblong, inferior. Style one, awl-shaped, upright, from the hinder lobe of the calyx, longer than the stamen. Stigma sharp.

PER. none.

SEED one, roundish, naked.

^d Stokes in With.

^e Pallas.

^f Gærtner.

^g Pallas.

^h Linn.

ⁱ Linn. spec.

ESSENTIAL CHARACTER.

Cal. a two-lobed rim to the germ. Cor. none. Stigma simple. Seed one.

SPECIES.

1. Hippuris vulgaris. Common Mare's-tail.

Lin. spec. 6. syst. 53. Reich. 1. 9. Fl. lapp. n. 1.

Juec. n. 2. hort. cliff. 3. Gærtn. fruct. 2. 24.

Huds. angl. 2. Wither. arr. 2. Lightf. scot. 70.

Relb. cant. n. 1. Sibth. oxon. n. 1. Curt. lond. 4. 1.

Pollich pal. n. 1. Neck. gallob. 2. Jacqu. vind. 1.

Fl. dan. t. 87. Allion. pedem. n. 1892. Krock.

files. n. 2. Villars dauph. 2. 1.

Limnopeuce. Cord. hist. 150. Raii syn. 136. Vaill.

mem. acad. 1719. t. 1. f. 3. Hall. helv. n. 1572.—

vulgaris. Scop. carn. n. 2.

Equisetum palustre brevioribus foliis polyspermon.

Bauh. pin. 15. Raii hist. 129.

E. pal. alterum brev. foliis. Park. theat. 1201. 4.

t. 1200. 4.

Polygonum foemina. Matth. 952. Ded. pempt. 113.

Camer. epit. 689.

Equiseti facie Polyg. foem. Bauh. hist. 3. 732.

Cauda equina foemina. Ger. 957. 6. emac. 1114. 6.

Leaves eight at a joint awl-shaped.

2. Hippuris tetraphylla. Four-leaved Mare's-tail.

Lin. syst. 53. suppl. 81.

H. lanceolata. Retz. obs. 3. 7. n. 1.

Leaves four at a joint oblong blunt.

3. Hippuris indica. Indian Mare's-tail:

Lour. cochinch. 16.

Cyperus dulcis. Rumph. amb. l. 10. c. 3. t. 3. f. 1.

Scape naked, root tuberous.

DESCRIPTIONS, &c.

1. Root perennial, creeping, white, jointed; the joints furnished with numerous capillary fibres. Stems numerous, a foot and half or more in height, upright, quite simple, smooth, striated, round, jointed, spongy; the pith like a thread in the centre, compact, and in the roots tough. Leaves in whorls at each joint, from eight to twelve or thirteen in number, linear, sessile, perfectly smooth and entire, acuminate, without veins, appearing hollow-dotted when magnified; those under water reflex. Flowers axillary, sessile, one to each leaf, in the whorls that are above water. Filament seated on the top of the germ, at first very short, but on shedding its pollen becoming as long as the pistil: anther two-lobed, purplish and rather large. Style very short, naked: stigma tapering to a point, white and downy when magnified. Seed oblong, hard, white within, and in the centre brown, covered with a thin membrane or aril^k. Gærtner calls it a nut, of an elliptic-globular form, on a very short peduncle, smooth and bay-coloured: the shell thick, hard, white, one-celled, valveless: the seed of the same size and shape with the shell, soft and whitish.

Linneus remarks, that the flower of this plant is as simple as can be conceived, having neither calyx nor corolla, only a single stamen and pistil, and one seed. The situation also of the leaves, in whorls, is not usual in European plants, except in the natural order of *Stellatæ*^l.

The flowers in the beginning of summer are mostly hermaphrodite, but at the close of it many of them are female^m.

Whilst several botanists are discarding the class Gynandria from the system, Retzius is desirous of having this plant removed from the class Monandria into it, on account of the stamen being placed upon the germⁿ.

Native of many parts of Europe, in ponds, ditches, marshes and rivers, especially where there is a depth of mud, and the frost cannot reach the roots. In quiet waters it grows upright, in large lakes to the height of several feet; in running waters it bends with the stream. In some countries it is a troublesome weed in rivers, and choaks up the ditches; but by absorbing a great quantity of inflammable air it is reputed to assist in purifying the putrid air of marshes. Gmelin says, that the wild-ducks in the north feed upon it.

^k Curtis, Relb. Linn.

^l Linn.

^m Curtis and Scop.

ⁿ Obs. 3. p. 7; and 6. p. 18.

Goats also are said to eat it: We do not know that it is of any other use. In England it is not very common; it is found however in several places in Cambridgeshire, Oxfordshire, Westmoreland, Staffordshire, Leicestershire, &c. Near London it is more rare; Blackstone found it in Harefield river and Uxbridge moor, Hudson in the New River near Hornsey, and Dr. Milne near Stoke Newington and Highgate. It flowers from May to August. Others give April to June for the time of flowering. I never found it sooner than May.

Gerarde calls this plant *Female Horse-tail*, and Parkinson *Marsh barren Horse-tail*; Mr. Hudson first named it *Mare's-tail*. In French it is *Pesse d'eau*, which is a translation of one of its old names *Limnopenice*, lake or water Pine. In German it is *Schafthalm*, *Tannenwedel*, &c. In Dutch, *Kattestaart*, *Paardestaart*. In Danish *Hesterumpe*, *Vand-studeknæ*. In Swedish, *Hästfans*. In Italian, *Hippuride*.

2. This is always very distinct from the preceding by its only having four leaves to a whorl, and their being spatulate-ovate and blunt. According to Retzius they are lanceolate, and the upper leaves are in fives. It has the appearance of *Elatine Alfinastrum*, and is clearly a gynandrous plant.

It is a native of Sweden, and was first discovered by Schulten near Abo in Finland.

3. This is a stemless plant, with a fibrous creeping root, having many, roundish, scattered, small, black, hairy tubers, which are eatable. Leaves awl-shaped, long, erect, clustered. Scape four feet high, very straight and simple, round, striated; within tubular, divided by many transverse membranes. Spike terminating, contracted, long, upright, netted-scaly. Stamen and style long, equal. Stigmas two, oblong. Seed orbiculate, naked, protected by a scale of the spike.—Native of marshes in Cochinchina.

HIPPURIS. See *Chara* and *Equisetum*.

HIPTAGE. See *Gärtnera*.

HIP TREE. See *Rosa canina*.

HIRÆA. (So named by Jacquin from Nicol. de la Hire, whose physico-botanical works are in the Memoirs of the Academy of Sciences at Paris, and four volumes of his drawings in the Imperial Library at Vienna.)

Lin. gen. Reich. n. 623. Schreb. 781. Jacqu. amer. 137. t. 176. f. 42. Triopteris. Juss. 253.

Class. 10. 3. Decandria Trigynia.

Nat. order of Tribilata. Malpighiæ, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets ovate, upright, very small, permanent.

COR. Petals five, roundish, concave, with long claws.

STAM. Filaments ten, capillary (united at the base?); the outer ones shorter. Anthers roundish, upright.

PIST. Germ roundish. Styles three, simple, upright. Stigmas bifid, blunt, spreading.

PER. Capsules three, upright, keeled on the back; each having a single spreading wing on the outside at the base, and a double one at the tip; not gaping.

SEEDS solitary, roundish.

OBS. Too nearly allied to *Triopteris*; differing in having three two-winged capsules, instead of a three-celled capsule with three wings.

Swartz.

ESSENTIAL CHARACTER.

Cal. five-leaved. Pet. roundish, on long claws. Caps. three-celled, with three wings (three, with two wings, one-celled, Jacquin.) Seeds two (solitary, Jacquin.)

SPECIES.

1. *Hiræa reclinata*.

Lin. syst. 427. Reich. 2. 373. Jacqu. amer. 137. t. 176. f. 42. pict. 68. t. 260. f. 37.

DESCRIPTION, &c.

This is a small tree, seldom exceeding fifteen feet in height, and dividing into round, long, smooth, bending and reclining branches, by which it supports itself on neighbouring shrubs. Bark ash-coloured. Leaves oblong, a little broader at top, blunt at both ends, quite entire, smooth underneath, having soft, decum-

bent, scarcely conspicuous hairs on the upper surface, and being from three to six inches long; the petiole has two upright bristly stipules at the base. Common peduncles thick, very short and numerous beautifully surround entire and very long branches, and by means of twelve semioval short bractes, finish in a quadrilocular top; the partial peduncles being one-flowered, an inch long, solitary, and therefore four to each common peduncle. Flowers beautiful, but without scent, yellow, an inch in diameter.

Native of Carthage in New Spain, in woods; flowering in June, and ripening the seeds in September.

HIRCULUS. See *Saxifraga*.

HIRTELLA. (Dimin. from *hirtus*; so named from the hairiness of the branches.)

Lin. gen. n. 280. Reich. 299. Schreb. 388. Jacqu. amer. 8. Juss. 340.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Rosaceæ, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-parted: parts subovate, reflex, unequal, permanent.

COR. Petals five, roundish, concave.

STAM. Filaments three or five, bristle-shaped, flattish, very long, permanent, at length rolled in spirally. Anthers orbiculate.

PIST. Germ roundish, compressed and declining, villose. Style filiform, almost the length of the stamens, arising from the depressed side of the germ. Stigma simple.

PER. Berry oval, broader at top, a little compressed, obscurely-three-cornered, at whose base in front lie a villose germ and style.

SEED one, large, of the same form with the pericarp.

ESSENTIAL CHARACTER.

Pet. five. Filam. very long, permanent, spiral. Style lateral. Berry one-seeded.

SPECIES.

1. *Hirtella americana*.

Lin. syst. 242. spec. 290. Reich. 1. 563. hort. cliff. 17. Swartz prodr. 151. obs. 94. Aubl. guian. 246. t. 98.

Leaves ovate-lanceolate, branchlets hirsute, racemes upright simple, flowers five-stamened.

2. *Hirtella triandra*.

Swartz prodr. 50.

H. americana. Jacqu. amer. t. 8. pict. t. 11.

Leaves oblong acuminate, racemes compound loose, flowers three-stamened.

3. *Hirtella paniculata*.

Swartz prodr. 51. Vahl symb. 2. 43. t. 31.

Leaves elliptic shining with hairy subcoriaceous racemes upright, flowers five-stamened.

DESCRIPTIONS, &c.

1. This is a tree, with a trunk from twenty-five to thirty feet in height, and a ferruginous bark. Branches wand-like, scattered, spreading, subdivided, round, hirsute: branchlets round, hirsute. Leaves on short petioles, alternate, smooth, entire, acuminate, from three to six inches long. Stipules in pairs, lanceolate, at the base of the petioles, deciduous. Racemes axillary, hirsute, ferruginous. Flowers alternate, peduncled, somewhat rough with hairs. Petals rounded, with claws, emarginate, blueish. Filaments five, all fertile, placed on one side, long, whitish blue: anthers roundish. Germ rounded, villose: style lateral: stigma blunt. Berry obovate, compressed, hairy-rough, dry. Native of Cayenne, where it is called by the French Bois de Gaulette. Introduced in 1782, by Mr. Alexander Anderson.

2. This is a branching tree, twenty feet high, frequently less. Leaves quite entire, shining, on short petioles, alternate, five inches long. Racemes terminating, villose, half a foot in length. The flowers have no scent; the stamens and style are placed crosswise. The calycine segments are ovate-roundish, concave, equal, reflex. Petals spreading, equal, deciduous, white. Filaments three, filiform, flattened at the base, upright, very long, permanent, finally rolled in spirally: anthers roundish. Germ roundish, villose,

* Linn. suppl.

† Obs. 3. p. 7.

‡ Loureiro.

§ Jacquin.

¶ Swartz.

‡ Hort. kew.

compressed on the side, without any stamen close to it: style filiform, hirsute at bottom, almost the length of the stamens: stigma simple.—Native of the West Indies, Martinico, Jamaica, Domingo: flowering in april and may.

3. Branches round, with a purplish bark, rough-haired at top. Leaves on very short petioles, alternate, spreading, abundant, an inch and half long, quite entire with a small point, veined, hairy along the veins, of a different colour underneath. Stipules awl-shaped, very rough-haired. Racemes axillary, from upright spreading, solitary, longer than the leaf; extremely hirsute. Pedicels copious, alternate, solitary or sometimes but seldom two together. Bractes ovate, frequently two on the pedicel, hirsute on the outside, and others lanceolate, at the base of the pedicel. Calyx hirsute on the outside, coloured, tomentose within, somewhat silky. Filaments five, long. Style hirsute at the base.—Native of Cayenne, where it was found by Rohr*.]

HIRUNDINARIA. See *Asclepias* and *Lyfimachia Nummularia*.

HOEING is beneficial to plants: 1st, for destroying weeds; 2dly, because it disposes the ground better to imbibe the night dews, keeps it in a constant freshness, and adds a vigour to the plants and trees, whose fruit by that means, becomes better conditioned than otherwise it would be.

This operation is performed by the hand, with an instrument called a Hoe, which is well known to every gardener. There are several sizes of these; the smallest, which is called an Onion Hoe, is not more than three inches broad, and is used for hoeing Onions; not only to cut up the young weeds, but also to thin the Onions, by cutting up all those which are too close. The next size is near four inches and a half broad, and is called a Carrot Hoe; this is used for hoeing Carrots, or any other crop which requires the same room as those. The largest size is about seven inches broad, and is frequently called a Turnep Hoe, being used for hoeing Turneps; but this is generally used by the kitchen-gardeners, for hoeing between all their crops which are planted out, or stand so far asunder as to admit an instrument of this breadth to pass between the plants. Besides these sorts of Hoes, which are contrived to draw towards the person who uses them, there is another of a different form, which is called a Dutch Hoe; this is made for the person who uses it to push from him, so that he does not tread over the ground which is hoed. This is a very proper instrument for scuffling over the ground to destroy weeds, in such places where the plants will admit of its being used, and a person will go over a much greater space of ground in the same time with one of these instruments, than with the common Hoe; but this instrument is not so proper for hoeing our crops, so as to leave the plants at a proper distance, nor will it penetrate the ground so far; therefore the other sort of hoe is to be preferred to this, because it stirs the ground and loosens the surface, whereby the dews penetrate the ground, and thereby promote the growth of the plants. Of late years there has also been another instrument introduced in the field culture, called the Horse Hoe, which is a sort of plough with the shear set more inclining to a horizontal position than the common plough.

The utility of the Horse-hoeing husbandry, is first, in proportioning the number of plants which the ground is supposed capable of nourishing properly. The second is, by frequent stirring the surface of the land, all weeds which rob the crop of its nourishment are destroyed, and the clods of earth are hereby divided and pulverized, so that the roots of the plants can more easily penetrate them, and search their proper food; besides the dews and moisture are easily imbibed in the loose ground, whereby the plants receive a greater share of nourishment.

There are few persons who properly consider of what consequence the stirring and breaking the surface of the ground is to all crops growing therein. I have

* Jacquin. * Vahl.

frequently made trial of this, when the crop has been so bad as to be thought not worth standing, which has been occasioned by the great quantity of rain which has fallen, whereby the surface of the ground has been so closely bound, as that the plants could find no nourishment, but have changed their usual verdure to a purple colour, and have made no progress; but upon hoeing the ground and breaking the clods, the plants have put out new roots, and have flourished exceedingly. From many repeated trials of this kind I can affirm, that if the Wheat in general was sowed in rows, so as that the plough may be brought between them in the spring, to loosen the ground, which by the winter's rains may have been too closely bound, the crop would more than double what is the common produce. And by this method of husbandry I can affirm, that all crops will be so much improved, as to doubly answer the difference of expence, and less than a sixth part of the seed will be enough for the same space of ground. The common swing plough will answer all intents of Horse-hoeing.

[HOFFMANNIA. (So named by Swartz, in memory of Maurice Hoffmann, professor of botany at Altorff; author of *Florilegium Altorfinum*, 1660.)

Lin. gen. Schreb. (788) n. 1719. Swartz prodr. 30.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Stellatae*. *Rubiaceae*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, four-toothed, superior: *teeth* upright, sharp.

COR. monopetalous, falver-shaped: *tube* so short as to be next to none: *border* four-parted; *parts* lanceolate, spreading.

STAM. *Filaments* none. *Anthems* four, fixed to the base of the tube, linear-subulate, upright, pressed close to the style.

PIST. *Germ* inferior, oblong-four-cornered. *Style* subulate, the length of the stamens. *Stigma* blunt, scarcely emarginate.

PER. *Berry* oblong, slightly four-cornered, crowned, two-celled, two-valved.

SEEDS numerous, roundish, fixed to receptacles in each cell.

ESSENTIAL CHARACTER.

Cal. four-toothed. Cor. falver-shaped, four-parted.

Filam. none. Berry two-celled, many-seeded.

SPECIES.

1. *Hoffmannia pedunculata*.

Swartz prodr. 30.

Native of Jamaica.

HOG PLUM. See *Spondias*.

HOG'S-FENNEL. See *Peucedanum*.

HOGWEED. See *Boerhavia*, *Heracleum*, *Polygonum aviculare*.]

HOLCUS (of Pliny: from *ολκος*, *tractus*, a furrow, &c.)

Lin. gen. n. 1146. Reich. 1252. Schreb. 1565.

Mieg. *ast. belv.* 8. t. 4. Gært. t. 80. Juss. 30.

Sorgum. Mich.

Class. 23. 1. Polygamia Monoecia.

Nat. order of *Gramina* or *Grasses*. *Gramineae*, Juss.

GENERIC CHARACTER.

* *Hermaphrodite* flowers, sessile.

CAL. *Glume* one-flowered, two-valved, subovate, obtuse, coriaceous, awnless: *outer valve* large, concave, slightly three-toothed at the tip, embracing the *inner valve*, which is oblong, rolled up on the sides.

COR. *Glume* two-valved, tender, villose, less than the calyx: *outer valve* smallest, placed within the inner calycine valve, in most of the species bifid at the tip, and awned: *awn* from the cleft of the glume, long or short, jointed, twisted; sometimes none.

Nectary three-leaved; two of the leaflets cartilaginous, truncate; the third opposite, ovate or lanceolate, villose.

STAM. *Filaments* three, capillary, very tender. *Anthems* oblong, bifid.

PIST. *Germ* ovate. *Styles* two, capillary, diverging. *Stigmas* oblong, feathered.

PER. none; but the glumes of the corolla and calyx are rolled about the seed and inclose it.

SEED solitary, ovate, covered, armed with the awn of the corolla, which however easily falls off.

* *Male*

* Male flowers peduncled, solitary or in pairs accompanying the hermaphrodite, smaller.

CAL. Glume two-valved: valves ovate-lanceolate, sharpish, chaffy, awnless; the outer valve concave, embracing the inner, which is narrower.

COR. Glume two-valved, smaller, more tender: outer valve within the inner valve of the calyx, shorter, two-toothed, awnless; the inner valve doubled up on the edges.—Nectary as in the Hermaphrodites.

STAM. Filaments three, as in the Hermaphrodite.

PIST. Germ small, angular, abortive. Styles two, bristle-shaped. Stigmas none.

ESSENTIAL CHARACTER.

HERM. Cal. Glume one or two-flowered. Cor. Glume awned. Stam. three. Styles two. Seed one.

MALE. Cal. Glume two-valved. Cor. none. Stam. three.

SPECIES.

- [1. *Holcus spicatus*. Spiked *Holcus*.
Lin. spec. 1483. Reich. 4. 306.
Panicum indicum. Dod. pempt. 507. — spica obtusa cærulea. Baub. pin. 7. theat. 522.
P. americanum. Clus. hist. 2. 215.
Gramen alopecuroides indicum maximum. Raii hist. 1908.
Glumes two-flowered awnless, flowers in pairs involucred with a pencil, spike ovate-oblong.
2. *Holcus bicolor*. Two-coloured *Holcus*.
Lin. syst. 905. Reich. 4. 307. mant. 301. hort. cliff. 468. Gärtn. fruct. 2. p. 3.
H. Sorghum. Mieg. in act. belv. 8. 129. t. 4. f. 4.
Milium arundinaceum, subrotundo semine, Sorgho nominatum. Baub. pin. 26. Mor. hist. 3. 196. f. 8. t. 5. f. 7. referred by Gärtner to n. 6.
Glumes smooth black, seeds globular white awned.]
3. *Holcus Sorghum*. Indian *Holcus* or Millet.
Lin. spec. 1484. syst. 905. Reich. 4. 307. mant. 500. hort. upf. 301. Gron. orient. n. 325. Gärtn. fruct. 2. p. 2. Mieg. act. belv. 8. 125. t. 4. f. 3. Thunb. jap. 42.
H. Durra. Forsk. descr. 174.
Sorghum fructu albo. Best. eyf. autumn. 2. t. 13. f. 2.
Sorghum album, Milium indicum. Baub. hist. 2. 449.
Sorghum. Ger. 77. emac. 83. Raii hist. 1252.
Melica f. Sorghum. Park. theat. 1137. f. 3.
Panicum 7. Brown. jam. 134.
β. *Holcus rubens*. Gärtn. fruct. 2. 3.
Sorghum fructu rubro. Best. eyf. aut. 2. t. 13. f. 1?
Cholomon-mille Caffris.
Glumes villose, seed compressed awned.
- [4. *Holcus halepensis*. Panicked *Holcus*.
Lin. spec. 1485. syst. 905. Reich. 4. 307. Schreb. gram. 129. t. 18. Mieg. in act. belv. 8. 123. t. 4. f. 2. Gouan hort. 513.
H. exiguus. Forsk. descr. 174. n. 75.
Gramen arundinaceum paniculatum, locustis partim muticis, partim aristatis. Scheuch. gram. 509. t. 11. f. 12 to 15.—halepense, tragopogonis folio, panicula miliacea. Pluk. phyt. t. 32. f. 1.—syriacum Hulliaun dictum. Mor. hist. 3. 201. n. 26. f. 8. t. 6. f. 26. Raii suppl. 616.
Andropogon arundinaceum. Scop. carn. n. 1236. Allion. pedem. n. 2282.
Glumes smooth, hermaphrodite flowers awnless, female awned.
5. *Holcus nitidus*.
Vahl symb. 2. 102.
Glumes one-flowered villose, all the flowers awnless.]
6. *Holcus saccharatus*. Yellow-seeded *Holcus*.
Lin. spec. 1484. Reich. 4. 308. Mieg. in act. belv. 8. 119. t. 4. f. 1. Lour. cochinch. 645. Gärtn. fruct. 2. 3.
Sorghum Battari. Rumph. amb. 5. 194. t. 75. f. 1.
Milium indicum, &c. Baub. theat. 488. Breyn. prodr. 2. Herm. lugdb. 425. Burm. zeyl. 159. Sloan. cat. 25.
Panicum 9. Brown. jam. 135. 9.
Glumes villose, all the seeds awned.
- [7. *Holcus mollis*. Soft *Holcus*, or creeping Soft-grass.
Lin. spec. 1485. syst. 905. Reich. 4. 308. Schreb. gram. 149. t. 20. f. 2. Hudf. angl. 440. Wither. arr. 1137. ed. 3. v. 2. p. 135. Curt. lond. 5. 8. 323. Lightf. scot. 631. Relb. cant. n. 637. Fl.

rust. t. 119. Pollich pal. n. 937. Leers herborn. n. 769. t. 7. f. 7. Neck. gallob. 415. Villars dauph. 2. 88. (Aira).

Avena. Hall. belv. n. 1485.

Gramen paniculatum molle radice graminis canini repente. Mor. hist. 3. 202.

Gr. caninum panic. molle. Raii hist. 1285. Scheuch. agr. 235. t. 4. f. 25.

Gr. miliaceum aristatum molle. Raii syn. 404.

Gr. can. longius radicatum. Baub. pin. 1.—latiore panicula. Lob. adv. 2. 467.

Glumes two-flowered almost naked, hermaphrodite floret awnless, male with a knee-jointed awn.

8. *Holcus lanatus*. Woolly *Holcus* or Meadow Soft-grass.
Lin. spec. 1485. syst. 905. Reich. 4. 308. Schreb. gram. 145. t. 20. f. 1. Hudf. angl. 440. Wither. arr. 1138. ed. 3. v. 2. p. 134. Curt. lond. 4. 11. 228. Lightf. scot. 631. Relb. cant. n. 638. Fl. rust. t. 118. Scop. carn. n. 1238. Pollich pal. n. 936. Leers herborn. n. 770. t. 7. f. 6. Neck. gallob. 414.

Aira. Lin. hort. cliff. 27. Villars dauph. 87.

Avena. Hall. belv. n. 1484.

Gramen pratense paniculatum molle. Baub. pin. 2. prodr. 3. theat. 27. Scheuch. agr. 234. t. 4. f. 24.

A. B. Park. theat. 1155. i. Loefel. pruss. 111. t. 25. Raii hist. 1285. Mor. hist. 3. 202. f. 8. t. 6. f. 34.

Gr. miliaceum pratense molle. Raii syn. 404.

Gr. tomentosum elegans, panic. contracta purpurea. Buxb. cent. 5. 36. t. 67. f. 2.

G. lanatum. Dalech. hist. 425. Baub. hist. 2. 466. 3. Ger. emac. 29. n. 6.

Glumes two-flowered villose, hermaphrodite floret awnless, male with a recurved awn.

9. *Holcus laxus*.
Lin. spec. 1486. Reich. 4. 309. Gron. virg. 136. (Aira).
Glumes two-flowered smooth awnless acuminate, panicle filiform weak.

10. *Holcus striatus*.
Lin. spec. 1486. Reich. 4. 309. Gron. virg. 135.
Glumes two-flowered striated awnless acuminate, panicle crowded oblong.

11. *Holcus ferratus*.
Lin. syst. 905. suppl. 433. Thunb. prodr. cap. 20.
Glumes two-flowered pubescent awnless, leaves ferrate.

12. *Holcus odoratus*. Sweet-scented *Holcus*.
Lin. spec. 1485. Reich. 4. 310. Fl. suec. n. 918. Neck. gallob. 415.

Hierocloe. Gmel. fib. 1. 101.

Avena. Hall. belv. n. 1496.

Aira. Lin. suec. n. 70. edit. 1.

Poa. Lin. lapp. n. 53.

Gramen paniculatum odoratum. Baub. pin. 3. prodr. 7. theat. 36. Scheuch. agr. 236. Park. theat. 1156. n. 2. 1155. f. 2.

Gr. mariae borussorum. Loefel. pruss. 111. t. 26. Raii hist. 1287. n. 22.

Glumes three-flowered awnless acuminate, hermaphrodite flower two-stamened.

13. *Holcus redolens*.
Vahl symb. 2. 102.
Glumes three-flowered, side florets male awned hairy at the edge, the middle one subhermaphrodite awnless.

14. *Holcus latifolius*.
Lin. spec. 1486. Reich. 4. 310. Osb. itin. 247.
Glumes three-flowered, the first floret unarmed, two prickly at the edge, leaves subovate.

15. *Holcus pertusus*.
Lin. syst. 906. Reich. 4. 310. mant. 301.
Spikes digitate, glumes with the outer valve punched with a hole in the middle.

DESCRIPTIONS, &c.

1. Culm two feet high, the thickness of a swan's quill, covered with the sheaths of leaves; both of them are hispid. Leaves usually ten in number, a finger's breadth, hispid. Spike very thick with very short pedicels, having at the top a bundle of bristles, within which are two sessile flowers. Calyx two-valved, membranaceous, two-flowered. Outer petal of the hermaphrodite flower mucronate; of the male blunt.

blunt. Style longer than the flowers, woolly, slightly bifid at top. Anthers oblong. This is an annual Grass, and a native of the East Indies^a. Cultivated by Compton Bishop of London, at Fulham^b.

2. This is an annual Grass bearing a great resemblance to the next species, but very distinct from it by the black calyxes and the seeds of a snowy whiteness^c.

Though Linneus has made this a distinct species, it is more probable that Gärtner is right in making it only a variety of *Holcus Sorghum*, from which it differs in nothing more than in having the calyx when ripe cartilaginous, black and shining.—It was observed in Persia by Lerche^d.

3. Panicle contracted, ovate, upright, but as it ripens drooping. Calyx green; pubescent. Awn brown at bottom, smooth and whitish at top^e. Seed naked, free, subglobular, compressed a little on both sides, smooth without shining, of a milky whiteness with a black umbilical dot. There are several varieties of *Sorghum*, as of most cultivated plants. The most remarkable, besides *H. bicolor*, is the red-seeded one, cultivated among the Caffres. Of this the calyx when ripe, is cartilaginous, pale chestnut-coloured, very smooth, shining only half the length of the seed; which is naked, obovate-globular, much acuminate towards the base, red, not shining^e.

Miller describes the *Sorghum* and *saccharatus* together, and indeed they differ so little as scarcely to merit being considered as distinct species. According to him] the stalks of these plants rise five or six feet high, are strong, reedy, and like those of the Maiz, or Turkey Wheat, but smaller. The leaves are long and broad, having a deep furrow through the centre, where the midrib is depressed on the upper surface, and is very prominent below. The leaves are two feet and a half long, and two inches broad in the middle, embracing the stalks with their base. The flowers come out in large panicles at the top of the stalks, resembling, at first appearance, the male spikes of the Turkey Wheat; these are succeeded by large roundish seeds, which are wrapped round with the chaff.

They are both natives of India, where this grain is much used to feed poultry, and is frequently sent to Europe for the same purpose. [This is much cultivated in Arabia, and most parts of Asia Minor. It has been introduced into Italy, Spain, Switzerland, and some parts of Germany; also into China, Cochinchina, and the West Indies, where it grows commonly five or six feet high, or more, and being esteemed a hearty food for labourers, is called Negroe Guinea Corn. Its long awns or bristles defend it from the birds^f. In England, the autumns are seldom dry and warm enough to ripen the seed well in the field.

In Arabia it is called *Dora* or *Durra*; the flour is very white; and they make good bread of it, or rather cakes, about two inches in thickness^g. The bread which they make of it in some parts of Italy is dark and coarse. In Tuscany it is used chiefly for feeding poultry and pigeons; sometimes for swine, kine and horses. Cæsalpinus says, that cattle fed on the green herb are apt to swell and die, but thrive on it when dried. They make brushes of it in Italy, which Ray observed in the shops at Venice^h. It was cultivated here in 1596, in John Gerarde's gardenⁱ.

In German this is named *Mohrhirse*, *Sorgsamen*, *Sorgfaat*, *Welsche Hirse*, *Indianische Hirse*. In Dutch, *Gewoon Zorghzaad*, *Negerkoorn*. In French *Houque sorgo*, *Grand Millet*. In Italian, *Saggina*, *Sagginella*, *Sorgo*, *Melica*. In Spanish, *Alcandia*, *Melca*. In Portuguese, *Milho Sorgo*. In Tartarian, *Myssur*, *Su-burge*. In Japanese, *Sioku*, *Kibi*. In Guinea, *Guarnatt*.

4. Culm smooth and even. Panicle spreading, purple, awns white at the tip. To each female (or hermaphrodite) flower there are two male flowers, which are pedicelled^k.

The root is perennial and increases by lateral runners like the reed: Leaves a foot and half in length a finger or an inch in breadth, somewhat glaucous, with a remarkable white line running along the middle, as in *Tragopogon*. Culms from three feet to near five feet in height, reedy, jointed, with leaves on them like the lower ones, only smaller. Panicle erect, from a hand to a long span in length, brownish. Seeds oblong, mucronate, somewhat turgid, brown, shining.

Native of Syria. Cultivated at Oxford in 1699 by Jacob Bobart, from seed sent over by Huntington^l. Scheuchzer had his specimens from Triumphetti and Jussieu, and gives a very long description. Scopoli refers to Scheuchzer's name, and describes it as an *Andropogon*. Allioni adopts Scopoli's name, and says that it is wild near Turin, and in other parts of Piedmont and Montserrat.

5. Culm round, upright, with bearded joints. Leaves narrow, striated, shorter than the sheath; the last spatheous, of the same height with the culm; sheath bearded at the mouth. Panicle upright. Peduncles in a sort of whorl, capillary, bearded at the base, quite simple, three-flowered, sometimes proliferous; pedicels usually in pairs, seldom solitary. Middle flower hermaphrodite, fertile; lateral male, pedicelled; all ovate-lanceolate, somewhat compressed, bearded at the base with fulvous hairs. Glumes of the hermaphrodite flower brown, with fulvous hairs scattered over them, especially at the edge and tip, smoother in the middle, shining: of the males villose, narrower, sharper, not shining.—It is a native of the East Indies, and has the habit of the preceding, but is smaller in all its parts^m.

6. Root biennial. Plant the height of a man (with a solid, jointed, upright and very simple culm, *Lour.*) from the lower joints of which issue rooting fibres. Leaves like those of the Sugar-cane, with a white longitudinal lineⁿ, stiffly lanceolate, smooth, large, with clasping petioles. Panicle large, diffused. Calyx coloured, almost closed, longer than the seed, hairy at the base and tip. Awn of the corolla twice as long as the calyx, straight, not writhed or jointed. Seed lenticular, thick, black, shining^o. The male flowers scarcely open.

According to Gärtner, the panicle is oblong and loose, with the racemelets when ripe spreading horizontally. Flowers almost obovate, obscurely angular. Calyx one-flowered, with the valves when ripe coriaceous, very smooth and shining, straw-coloured or ferruginous, closely surrounding the seed. Corolla membranaceous, very thin, villose at the edges, with a short, bristle-shaped, bent-jointed dorsal awn. Seed elliptical, covered with the permanent calyx and corolla, convex on one side, flattish on the other.

The villosity of the calyx is as inconstant as the colour, and is almost always lost in maturity: the colour generally changes to dark or black: these circumstances therefore are unfit to use for specific differences. This species and *H. sorghum* differ little in habit or any thing else, except the one having a naked the other an incrustated seed.

It differs from *H. Sorghum* in having the panicle upright, in a sort of whorl; racemes spreading very much, horizontal, subpendulous, not a small ovate panicle: general rachis of the panicle smooth, not rugged: glumes villose on every side, not at the tip only: one glume of the corolla has a long writhed awn in all the florets, not in the terminating florets only.

Native of the East Indies^p. Cultivated in China and Cochinchina^q. Browne calls it Guinea Wheat, and says it had been lately introduced into Jamaica. Mr. Miller cultivated it here in 1759^r.

7. Creeping Soft-grass resembles the next species, says Linneus, but the calyxes are more acute than in the other species, and rather acuminate.—According to Schreber, the roots are creeping, like *Triticum repens*, (Quich or Couch-grass); the culms are taller; the leaves green; the calyx smooth; the awns straight, after flowering jointed, projecting somewhat beyond

^a Linn. spec. ^b Ray hist. ^c Linn. mant. ^d Ibid.
^e Gärtner. ^f Browne. ^g Rauw. Ray hist. Gron. orient.
^h Ray hist. ⁱ Hort. kew. ^k Linn. spec.

^l Hist. oxon. ^m Vahl. ⁿ Linn. spec. ^o Loureiro.
^p Linn. spec. ^q Loureiro. ^r Hort. kew.

the calyx. Mr. Curtis says it is usually a smaller plant than Meadow Soft-grass, or if it be as tall, it has a much more scanty panicle. The spikelets have not that brilliant colour which marks those of *lanatus* at their first appearance. The joints are woolly, and the spikelets large and pointed, with the awn much longer than the calyx. Both flowers are hermaphrodite, contrary to Linneus's specific character, and both apparently produce fertile seeds. This grass also rarely occurs but in and about woods and in hedges; whereas the *lanatus* is a very general grass in meadows. Ray affirms that it is very common in corn fields; but Mr. Curtis says that he has seldom seen it in that situation. It flowers in July, and is a worse grass than the *lanatus* on account of its creeping roots.

Haller makes it an *Avena*, to which genus, in the opinion of Dr. Stokes, its structure shows it really to belong. Schreber, in his *spicilegium*, makes it an *Aira*, to which Mr. Curtis also would refer it.

8. Root perennial, but not creeping. Stems from two to three feet high, upright, round, pubescent, with three or four joints. Leaves a quarter of an inch in breadth, grayish from being covered with soft hairs; the sheath marked on the outside with purple lines, and shining within; the ligule or membrane blunt or truncate, hairy on the outside and about the edge. Panicle at first contracted, reddish, and drooping a little; but afterwards upright, spreading and whitish. The velvet-like softness of the whole plant, and the redness of the opening panicle, render this grass very conspicuous. It abounds in meadows, is frequent by road sides, and sometimes grows on walls. It flowers in June and July. Haller speaks highly of this grass as food for cattle, but it is not at all esteemed among us. The seed however, being easily collected, is sometimes sent to London in great quantities, as pure grass-seed.

Lightfoot says that the stalks are used for making ropes for fishing boats in the isle of Skye; but there are better grasses for this purpose^a.

A gentleman's horses having been much disordered with a malady, which occasioned an extraordinary discharge of urine, the hay on which they fed being examined, was found to contain scarcely any other grass but this; and on changing the hay the distemper ceased^b.

This fact ought to be well ascertained, before the *Holcus lanatus* is recommended, with Dr. Anderson^c, as one of the most valuable kinds of meadow grasses; though since he calls it creeping soft-grass, and talks of its running roots, he may mean *H. mollis*, which is one of the vilest weeds, at least in arable lands.

Mr. Marshall, in his *Rural Economy of Yorkshire*, says that it is far from an eligible grass for cultivation, is now entirely exploded by judicious husbandmen, and has been supplanted by Rye-grass (Ray-grass): the growers of the seeds being the only persons who have profited by its cultivation, eighty bushels having been produced from an acre^d. It goes there under the name of *White Hay-seeds*.

In his minutes of the midland counties he says it ranks high as a pasture plant, for cattle at least; that a piece which abounds in it to one half is esteemed excellent for cheese; is favourable to the growing of young heifers, and the fattening of Scotch bullocks, and that cattle of every kind do well in it, but not horses^e.

9. This has the habit of *Aira cærulea*. Culms two feet high, narrow, somewhat nodding. Leaves several, smooth and even, rugged about the edge, hairy at the mouth of the sheath. Panicle filiform, very little branched, somewhat nodding, weak. Peduncles usually two-flowered. Male flower ovate, thick.—Native of Virginia and Canada^f.

10. Leaves flat, long, with thickish, striated sheaths. Panicle attenuated, with very short, clustered, branching peduncles. Glumes oblong, striated, acuminate. Calyx one-leaved, very small.—Native of Virginia, in marshes^g.

11. Root perennial, creeping, covered at top with sheaths of leaves in clusters. Culms decumbent at bottom, branched, covered with the sheaths of leaves below, naked above, a foot high, even, quite simple, almost leafless. Leaves with swelling sheaths, stiff, more ferrate than in the others. Raceme compound, narrow. Flowers villose, awnless, purple. Calyx two-flowered, soft, villose, covering the florets. Male flower three-stamened: female ovate, with cartilaginous petals.—Found at the Cape of Good Hope by Thunberg^h: who has also discovered several other species, not here enumerated.

12. Roots perennial, jointed, creeping. Culm three feet high, with few joints. Leaves narrow, very long, overtopping the panicle, convoluted so as to resemble the stalk of a rush, stiff, stout, and pungent. Panicle small, slightly scatteredⁱ. The two lateral flowers are male and three-stamened; the third in the middle is hermaphrodite and two-stamened.

Native of wet pastures in the colder parts of Europe, Canada, and Siberia. Introduced here in 1777, by Brook Watson, Esq.

This grass has a sweet smell, and is collected into bundles, to lay among cloaths and linen, and is hung over beds in some countries with a view to procure sleep^j.

13. Culm upright, a foot high, smooth, sheathed. Leaves the length of the culm, involuted, awl-shaped, striated. Panicle patulous, with filiform pedicels. Calyx lanceolate, longer than the florets, dirty yellow, shining; one glume larger and longer than the other. Florets three; two lateral, sessile, male, larger, outer valves pubescent, especially towards the edge, shining-brown, awned a little below the tip, obliquely truncated, awns the length of the valve; middle floret smaller, awnless, lanceolate. Stamens three, fertile in the males, barren in the middle flower. In appearance quite similar to the preceding, but differing in its involuted leaves, and florets of double the size.—Native of Terra del Fuego. *Fabricius*^k: and of New Zealand, if it be the same plant. *Forster*.

14. Culm even, scarcely a foot high. Leaves very broad, with broadish striated sheaths. Branches of the panicle simple, wand-like. Flowers alternate, solitary, on capillary pedicels, ovate-oblong. Calyx shorter. The first flower unarmed; the second and third armed with recurved spines at the upper edge.—Found in China by Osbeck^l.

15. Culm jointed, even, ascending, branched, about a foot high. Leaves alternate, remote, narrower. Spikes five, linear, equal, somewhat hairy, uprightish, pedicelled: rachis filiform, hairy, with two-flowered teeth; the lower floret sessile, the upper on a hairy pedicel the length of the lower floret, which is hermaphrodite; the upper is male. The former has oblong, convoluted petals, of which the outer is punched with a round hole in the middle; the awn is terminating, long, twisted. The latter is smaller, with linear convoluted petals, the outer not punched, and no awns.—Native of the East Indies^m.

Guinea Grass.

Guinea Grass, so called from its having been originally introduced into the West Indies from the coast of Africa, is a species of *Holcus*, according to Browneⁿ. The characters of it, he says, agree pretty well with those of *Panicum*, in general, but the flowers commonly grow very luxuriant, and though often hermaphrodite, are generally observed to be male and female distinct, surrounded by separate involucre, and standing on distinct pedicels within the same calyx.

The blades of this grass, when flourishing, appear not unlike those of Wheat, only rather broader and longer; and the stalks, during the first growth, are also much like those of Wheat, but they get weaker and less, the oftener the grass is fed upon or cut, till at last it becomes a fine, rich and entire swath.

Guinea-grass appears capable of thriving in any situation, in respect to climate and soil, and can bear the effects of dry or wet weather in a most remarkable manner.

^a Curtis.

^b Young's annals, vol. 20. p. 105.

^c Essays, vol. 2. 225.

^d 2. p. 88.

^e 2. p. 148.

^f Linn. spec.

^g Ibid.

^h Linn. suppl.

ⁱ Bauh. prodr.

^j Linn. succ.

^k Vahl.

^l Linn. spec.

^m Linn. mant.

ⁿ Jamaica. p. 366, species 2.

In wet weather it may be cut once in a fortnight, and sometimes oftener; when the land is new or fertile. In dry weather, it is long before it withers, and when reduced to such a state as to seem totally destroyed, will revive with a slight shower in a few hours: when rain falls, though so sparingly as to be of little or no service to common pastures, it will occasion this to be fit for use in a few weeks; nay in some situations, not too much exposed to the sun, it will flourish from occasional dews only. When ready to feed, it is from six to eight feet high, but it is generally fed or cut when only three or four.

It agrees with all kinds of stock; and horses, mules and kine will fatten so fast upon it, that the two former will be in good condition in a couple of months, or less: and the latter will become fit for the butcher in the course of three months¹.

Guinea-grass is said to have been brought from Africa to America by the English at the beginning of the present century; and the French have introduced it thence into St. Domingo, &c. about the year 1768. It has made its way in the Continent of North America from Carolina to New England: and attempts have been made to introduce it into Europe. It seems too tender to be of any advantage as fodder in England. In Jamaica it is now generally cultivated to supply both their stabled and working cattle: and Sir Archibald Campbell, who was governor of that island, carried the seed to the East Indies, where it was propagated with success, and was of great service to the cavalry; the horses having before that been fed on the roots of grass².]

PROPAGATION AND CULTURE.

3, 6, &c. These plants are propagated in a few gardens for the sake of variety, but as they are late in ripening their grain here, so they are not worth cultivating for use. The seeds should be sown on a warm border, or upon a gentle hot-bed in march; and when the plants come up, they should be thinned and planted at the distance of a foot asunder in the rows, and the rows should be three feet distance; the culture after this, is to keep the ground clean from weeds, and draw the earth up with a hoe to the stems of the plants; if the season proves warm, their panicles will appear in july, and the grain will ripen in september, but in bad seasons their grain will not ripen here.

[If the seeds however were procured from Germany or Switzerland, climates not very different from our own, it seems not improbable but that Sorghum might be made to grow to advantage on some of the warmer soils of our island.

7, 8, &c. For the culture of these see GRASS.

Guinea Grass.

The manner of cultivating this Grass in the West Indies is to make the land intended for it perfectly bare by hoeing, and then to dig holes from three to five feet distance, according to the quality of the soil. The holes should be large, and deep enough to bury a few roots of the grass a good depth. The roots are taken from a neighbouring field or nursery, and the grass being topped within three or four inches, they are put into the holes, well covered with earth, and pressed down by the foot. Care is taken to keep the plants free from weeds by repeated hoeings. The best months for planting are april and may, for the grass will then seed in september and october, at which time it seeds most abundantly. The ground must be quite clean when the seed is ready to drop; and if the spaces between the roots are then stirred with the hoe, it will be found very beneficial.

When the seed is all fallen, stock are turned in to tread it into the ground, and feed upon the grass. In very rich and new land, the grass at first will grow so rank as to produce very thick stalks, which, by running up the noses of the stock, will prevent them from eating it so close as they otherwise would. When however it is eaten as near the ground as possible, the remaining grass, with the roots which were planted, are

¹ Spooner in Bath papers, vol. 5. p. 282.

² Young's annals, 9. 409. & 13. 341.

dug out with the hoe and burnt off. After this, the grass, if favourable rains come, will grow from the seed, and by covering the ground in may following, will be perfectly established for several years, according to the quality of the land, to be cut for hay, or to stand for pasture.

Whenever the grass grows thin, holes may be opened in such places, and roots again planted to supply it; and by this attention, a field will scarcely ever be so totally worn out as to require the labour of being at any one time replanted.

With very little care in its infancy; this grass will overcome all other grass and weeds; and in ground full of stones and rocks, though planted at great distances at random, as the soil admits, it will spread itself about them in a few months, and at last cover them entirely.

If the stalks of Guinea-grass be buried a few inches deep, each joint of it will take root, and grow luxuriantly: or it may be propagated directly from sowing the seed, the ground being previously prepared for that purpose; but the seed will lie many months in the ground before it makes its appearance. Some planters do not stock up the roots which are planted, when the grass has seeded; and others depend upon what they afford, by continually feeding or cutting the grass when at a certain height, without ever allowing it to feed¹.]

HOLLOW ROOT. See *Adoxa* and *Fumaria*.

HOLLY. See *Ilex*.

—— knee. See *Ruscus*.

—— Sea. See *Eryngium*.

HOLLYHOCK. See *Alcea*.

[HOLM OAK. See *Quercus*.

—— SEA. See *Eryngium*.

HOLOSCHOENUS. See *Scirpus*.

HOLOSTEA. See *Stellaria*.

HOLOSTEUM. *Ολοστέον* of *Dioscorides*. From *ολος* totum, and *οστέον* osseum; wholly bony. Said to be so called per antiphrasin, from its tenderness.)

Lin. gen. n. 104. Reich. 110. Schreb. 136. Gærtn. t. 130. Juss. 299.

Class. 3. 3. Triandria Trigynia.

Nat. order of *Caryophyllei*. *Caryophylleæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets ovate, permanent.

COR. Petals five, two-parted, blunt, equal.

STAM. Filaments three, filiform, shorter than the corolla. Anthers roundish.

PIST. Germ roundish. Styles three, filiform. Stigmas bluntish.

PER. Capsule one-celled, subcylindric, gaping at the tip.

SEEDS very many, roundish.

OBS. In *H. succulentum* the petals are subtrifid, less than the calyx. In *H. umbellatum* the petals are three or two-toothed: stamens three or five: styles three or four: capsule six-valved at the tip.

ESSENTIAL CHARACTER.

Cal. five-leaved. Pet. five. Caps. one-celled, subcylindrical, opening at top.

SPECIES.

1. *Holosteum cordatum*. Heart-leaved *Holosteum*.

Lin. spec. 130. syst. 128. Reich. 1. 246. amoen. 3. 21. mant. 327. Fabric. helmst. 184. Brown. jam. 139.

Alfine. Lin. hort. upf. 24. Herm. par. 11. Sloan. jam. 1. 203. Raii suppl. 499. n. 39. Leaves subcordate.

2. *Holosteum diandrum*. Two-stamened *Holosteum*.

Swartz prodr. 27. Brown. jam. 139. n. 2.

Stems procumbent very rigid, leaves roundish, flowers two-stamened.

3. *Holosteum succulentum*. Succulent *Holosteum*.

Lin. spec. 130. syst. 129. Reich. 1. 246. mant. 328. amoen. 3. 21. Cold. noveb. 9. (Alfine).

Leaves elliptic fleshy.

4. *Holosteum hirsutum*. Hairy *Holosteum*.

Lin. spec. 130. Reich. 1. 246. amoen. 3. 21.

Leaves orbiculate hirsute.

¹ Spooner in Bath papers.

5. *Holosteum umbellatum*. *Umbelled Holosteum*.
Lin. spec. 130. *Reich.* 1. 246. *Gært. fruct.* 2.
 231. *Loeffl. it.* 120. *Pollich pal. n.* 135. *Leers*
herborn. n. 100. *Krock. filef. n.* 197. *t.* 31. *Villars*
dauph. 652. 1. *Rose elem. app.* 445. *t.* 2. *f.* 4.
Engl. bot. t. 27. *With. arr. ed.* 3. v. 2. p. 175.
H. caryophyllum arvense. *Tabern. ic.* 233.
Alfine. Hall. belv. n. 879. *Vaill. par.* 7.
Caryophyllus arvensis umbellatus, folio glabro. Baub.
pin. 210.—*umbelliferus. Baub. hist.* 3. 361. 1. *Raii*
hist. 1028. 8.—*umbellatus. Park. theat.* 1338. 6.—
holosteus. Ger. emac. 595. 16.
Cerastium umbellatum. Hudf. angl. 201. *Wither.*
arr. 479.
 β. *H. umbellatum hirsutum. Villars dauph.* 3. 652. 2.
Lychnis graminea hirsuta umbellifera. Mor. hist. 2.
 546. *f.* 5. *t.* 22. *f.* 46.
Caryophyllus holosteus tomentosus angustifolius.
Baub. prodr. 104. 10? *Raii hist.* 1028. n. 13?
Flowers umbelled.

DESCRIPTIONS, &c.

1. Stems decumbent, creeping, somewhat rigid at bottom. Leaves opposite, orbiculate-cordate, subsessile. Stipules four on each side, membranaceous. Peduncles lateral, elongated, ascending, seven-flowered, one in the middle, and three on each side, from a peduncle farther branched. Pedicels when mature viscid, dropping with the fruit. Calycine leaflets oblong, acute, concave. Petals white, upright, lanceolate, shorter than the calyx. Styles divaricating^m.

Native of Jamaica and Surinam. In the former it is common, and thrives very luxuriantly. Browne calls it the larger American Chickweed: and says, that it grows in tufts, and seldom rises above ten or twelve inches from the ground; that the smaller birds feed much upon the seeds, but that it is seldom put to any other use, except that large wads of the fresh plant heated over a gentle fire are sometimes applied to hard and painful swellings, in order to relax the parts and dispose the obstructions to a resolution.

2. This plant is very small, seldom rising above six or seven inches from the ground. Calycine leaflets and petals five, as in the other, but only two stamens, and these placed in the same line with the petals.—Native of Jamaica, but not commonⁿ. Annual.

3. Petals white, subtrifid, smaller than the calyx^o.—Native of New York.

4. Native of Malabar.

5. Root annual, slender, a little branched, fibrous, running perpendicularly down. Stems numerous, filiform, jointed, round, perfoliate, upright, from two or three to six inches high, having mostly three joints; the space betwixt the two lowest is smooth, the others for the most part viscid and hairy. Leaves in pairs at each joint, very entire, erect, cohering at the base, each pair crossing that above and below, smooth on the under side, the upper surface and margins a little hairy, concave at the base, keel-shaped, ovate, obtuse and fleshy. Root-leaves narrower and longer than the others. Two external bractes large, and of the same form with the leaves; the internal lanceolate and very small. Peduncles numerous, all from one centre, terminating, unequal, some hanging down, some declining a little, some erect, and some bent in different directions, filiform, one-flowered, permanent^p. Calyx never opening, marked at the base with black dots. Petals white, but often tinged with purple on the outside, converging, concealed within the calyx, so that the tips only peep out^q; they are marked with five white ribs, and are toothed at top, but the number of teeth vary from two to five; as do also the stamina and pistils, the former from three to five and even ten, the latter usually three, but sometimes four or five^r. Capsule ovate, smooth, shining, one-celled, six-valved, superior, scarcely opening beyond the middle: receptacle columnar, free, hispid with the umbilical chords, little more than half the capsule in length. Seeds numerous (about seventy), subovate, compressedly three-cornered, rugged with

scattered dots, with a groove on the back, and a ridge on the belly, rufescent^s.

Native of Spain, Italy, France, Germany, Switzerland, and England; where it was first noticed on walls at Norwich, and on walls and banks in the neighbourhood, by Mr. John Pitchford in spring 1765^t. It was also found near Bury in Suffolk by Sir Thomas Gery Cullum, Bart. It is an annual plant, flowering in april and may.

Hudson and Withering place it among the *Cerastiums*; whilst Swartz would remove the *Alfine media* or common Chickweed to this genus of *Holosteum*.

Villars makes two species of the *umbellatum*.—
 1. Smooth, with triandrous flowers. 2. Hairy, with decandrous flowers. The first smooth, smaller and greener. The second, very villose, larger, ash-coloured green all over, the peduncles and calyxes not clammy, as in the other. This is not so common as the other.

HOLOSTEUM. See *Acrostichum septentrionale*, *Juncus bufonius*, *Plantago*.

tetraphyllum. See *Polycarpon*.

HOMALIUM. (So named by Jacquin from *omalous*, equality: on account of the proportion observed in the stamens.)

Lin. gen. Schreb. n. 925. *Jacqu. amer.* 170. *Swartz prodr.* 86. *Juss.* 343.

Racoubea. Aubl. 236.

Class. 13. 3. *Polyandria Trigynia.*

Nat. order of Rosaceæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, six or seven-cleft: clefts ovate-lanceolate, sharp, spreading very much.

COR. *Petals* six or seven, ovate, flat, a little longer than the calyx, spreading very much.

Neetary, Glands six or seven, flat, alternate with the petals.

STAM. *Filaments* eighteen to twenty-eight, subulate, upright, the length of the corolla, of which three or four are inserted into the receptacle among the glands before the base of the petals. *Anthers* roundish, small.

PIST. *Germ* roundish, villose, immersed in the base of the calyx. *Styles* three, upright. *Stigmas* simple.

PER. *Capsule* woody, ovate, one-celled.

SEEDS very many, and very small.

ESSENTIAL CHARACTER.

Cal. six or seven-parted. *Cor.* six or seven-petalled. *Stam.* twenty-one, in three bodies. *Peric.* one-celled, many-seeded.

SPECIES.

1. *Homalium racemosum.*

Jacqu. amer. 170. *t.* 183. *f.* 72. *pic. t.* 261. *f.* 43.
Swartz prodr. 86.

Leaves serrate, racemes axillary and terminating, flowers peduncled.

2. *Homalium Racoubea.*

Swartz prodr. 86.

Racoubea guianensis. Anbl. guian. 590. *t.* 236.

Leaves toothed, coriaceous, racemes terminating, flowers subsessile.

DESCRIPTIONS, &c.

1. This is a lofty branching tree, with the habit and leaves of Elm. Flowers racemed, flat. Stamens sometimes eighteen, so that there are three before each petal.—Native of Martinico^u, and Jamaica^v.

2. This is a shrub with a trunk of about three or four feet high and four or five inches in diameter: the bark is whitish: the branches tortuous and spreading, and seven or eight feet in length: the leaves alternate, green, smooth, oval, and toothed; with rather pointed tips: the footstalks are short and have each two small caducous stipules at their base. The flowers are borne on spikes springing from the bosoms of the upper leaves: they are sessile, and of a yellow colour.—Native of Guiana^w.

HOMALOCENCHRUS. *Mieg. Hall. Allion. Asprella, Schreb. n.* 105. See *Leersia*.

HONESTY. See *Lunaria*.

HONE-WORT. See *Sison*.

^m Linn. mant. ⁿ Browne. ^o Linn. mant. ^p Rose.

^q Krock, ^r Haller, Leers, Krock, &c.

^s Gartner. ^t Rose. ^u Jacquin. ^v Swartz. ^w Aublet.

HONEY-FLOWER. See *Meliantbus*.

HONEY-SUCKLE. See *Lonicera*.

French. See *Hedysarum*.

HONEY-WORT. See *Cerinthæ*.

HOODED MILFOIL. See *Utricularia*.

WILLOW-HERB. See *Scutellaria*.

HOP. See *Lupulus*.

HOPEA. (So named by Dr. Garden, in honour of Dr. Hope, Professor of Botany at Edinburgh.)

Lin. gen. Reich. n. 979. Schreb. n. 1222. Juss. 157.

Class. 18. 4. Polyadelphia Polyandria.—Monadelphia, L'Herit.

Nat. order of *Guaiacaneæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, bell-shaped, five-cleft: clefts ovate, blunt, permanent.

COR. Petals five, oblong, concave, connected at the base, by the intervention of the bunches of stamens.

STAM. Filaments very many, bristle-shaped, longer than the corolla, connected at the base in five bodies. Anthers quadrangular.

PIST. Germ inferior, roundish. Style gradually thickening, the length of the corolla, permanent. Stigma thickish, obliquely depressed.

PER. Drupe dry, oval-cylindric, gibbous, crowned with the calyx.

SEED. Nut smooth, three-celled, protracted by a blunt tip.

Obs. Two cells of the nucleus are frequently abortive, and obliterated. It seems to have an affinity with *Styrax*.—L'Heritier unites this with *Alstonia*, *Ciponima* and *Symplocos*, under the latter name.

ESSENTIAL CHARACTER.

Cal. five-cleft, superior. Cor. five-petalled. Stam. many, connected in five bodies. Style one. Drupe with a three-celled nut.

SPECIES.

1. *Hopea tinctoria*.

Lin. mant. 105. syst. 699.—ed. 13. 582.—12. 509.

Symplocos tinctoria. L'Herit. in Linn. trans. 1. 176.

Arbor lauri folio, floribus ex foliorum alis. Catesb. car. 1. t. 54. (bad).

DESCRIPTION, &c.

This is a tree, with alternate, petioled, simple, oblong, lanceolate-ovate, subserrate, shining, nerveless, sweet leaves. The peduncles burst forth from buds upon the topmost branchlets, eight or ten together, before the leaves, and are disposed in a very short spike, on very short, one-flowered pedicels, clothed with small, concave, villose leaflets. The flowers are succeeded by subsessile fruits, below the leaves, in a very short spike. It flowers early in the spring, and is then extremely sweet. The juice or a decoction of the leaves will dye linen and silk of a bright yellow colour.—Native of Carolina².

HOP-HORN-BEAM. See *Carpinus*.]

HOPS. See *Humulus*.

HORDEUM. (Either horridum from horreo, on account of its long awns or beards; or since it was anciently writ Fordeum, rather from φορδω to feed or nourish, whence φορδον and Forbea, and changing the b into d, Fordeum. Vossius.)

Lin. gen. n. 98. Reich. 104. Schreb. 129. Gærtn. t. 81. Tournef. 295. Juss. 32.

Class. 3. 2. Triandria Digynia.

Nat. order of Grasses, or Gramina. Gramineæ, Juss.

GENERIC CHARACTER.

CAL. Common Receptacle lengthened into a spike. Glume six-leaved three-flowered: flowers sessile: leaflets distant, in pairs, linear, acuminate.

COR. two-valved; lower valve bellying, angular, ovate-acuminate, longer than the calyx, ending in a long awn: inner valve lanceolate, flat, smaller. Nectary two-leaved; leaflets ovate, sharp, ciliate.

STAM. Filaments three, capillary, shorter than the corolla. Anthers oblong.

PIST. Germ ovate-turbinate. Styles two, villose, reflex. Stigmas similar.

² Linn. mant.

PER. none: the corolla grows round the seed, without opening.

SEED oblong, bellying, angular, acuminate to both ends, marked with a groove on one side, (covered with the permanent corolla; radicles of the embryo six, G.)

Obs. In some species all the three flowers contained in an involucre are hermaphrodite and fertile; in others the side flowers are males, and the middle one only is a fertile hermaphrodite.

ESSENTIAL CHARACTER.

Cal. lateral, two-valved, (valves narrow, acuminate, distant, all together forming a six-leaved involucre), one-flowered, by threes, at each toothlet of the rachis.

SPECIES.

1. *Hordeum vulgare*. Spring Barley.

Lin. spec. 125. Reich. 1. 235. hort. cliff. 24. ups. 22. mat. med. 47. Hall. helv. n. 1533. Blackw. herb. t. 423. Fl. rust. 90. Villars dauph. 172. Neck. gallob. 73.

Hordeum. Lob. ic. 28. Ger. 64. 1.—distichon. Ger. emac. 70. 1. Park. theat. 1129. 1. t. 1130. f. 1. Raii hist. 1243. 1.

β. *Hordeum cœleste*. Lin. hort. ups. 23.

H. nudum gymnocriton. Baub. hist. 2. 430.

Zeocriton vel *Tritico-Speltum*. Baub. theat. 423.

All the florets hermaphrodite and awned in two very upright rows.

2. *Hordeum hexastichon*. Winter or Square Barley, Bear or Big.

Lin. spec. 125. Reich. 1. 236. hort. ups. 23. Hall. helv. n. 1534. Gærtn. fruct. 2. 10. Fl. rust. 107. Villars dauph. 2. 172.

H. hexastichon pulchrum. Baub. hist. 2. 129. Raii hist. 1244. 3. syn. 388. Park. theat. 1130. f. 2.

H. polytichum hybernum. Baub. theat. 439. Mor. hist. 3. 206. f. 8. t. 6. f. 3.—et forte vernum.

All the florets hermaphrodite and awned, the grains placed regularly in six rows.

3. *Hordeum distichon*. Common Barley.

Lin. spec. 125. syst. 125. Reich. 1. 236. hort. ups. 23. mat. med. 47. Hall. helv. n. 1535. Neck. gallob. 73. Villars dauph. 2. 172. Gærtn. fruct. 2. 10. Baub. pin. 22. Mor. f. 1.

β. *Hordeum nudum*. Lin. spec. 125. Reich. 236. Villars dauph. 2. 173.

Lateral florets male and awnless, grains angular imbricated.

4. *Hordeum Zeocriton*. Sprat or Battledore Barley.

Lin. spec. 125. syst. 125. Reich. 1. 236. hort. ups. 23. n. 5. Schreb. gram. 125. t. 17.

H. distichum, spica lata compressa brevior. Mor. hist. 3. 206. f. 8. t. 6. f. 2.—sp. brev. & latiore, granis confertis. Raii hist. 1243.

H. dictum *Oryza germanica*. Baub. hist. 2. 429. (figure good).

Zeocriton f. *Oryza* germ. Baub. pin. 22.

Lateral florets male awnless, grains angular spreading corticated.

* Grasses.

[5. *Hordeum bulbosum*. Bulbous Barley-grass.

Lin. spec. 125. Reich. 1. 237. amoen. 4. 304.

Gramen secalinum bulbosa radice. Barr. ic. 112. f. 2. Scheuch. agr. 19.

Gr. bulb. ex Alepo. Baub. pin. 2. prodr. 4. theat. 21. Baub. hist. 2. 431. Raii hist. 1258.

Gr. secal. chapelense, rad. tuberosa. Mor. hist. 3. 179. f. 8. t. 6. f. 7.

All the florets in threes fertile awned, involucre bristle-shaped ciliate.

6. *Hordeum murinum*. Wall Barley-grass.

Lin. spec. 126. Reich. 1. 237. hort. cliff. 24. fl. succ. n. 113. Hudf. angl. 56. Wither. arr. 126. ed. 3.

v. 2. p. 171. Curt. lond. 5. t. 9. 325. Hall. helv. n. 1536. Scop. carn. n. 1241. Pollick pal. n. 132. Krock. fles. n. 193. Villars dauph. 2.

174. Fl. dan. t. 629. Fl. rust. t. 43. Baub. hist. 2. 431.

Gramen hordeaceum minus & vulgare. Baub. pin. 9. theat. 134. Scheuch. agr. 14. Reliqu. Rudb. t. 12. f. 2.

- Gr. fecalinum. Ger. 66. 2. *emac.* 73. 1. *Park. theat.* 1147. *Raii hist.* 1258. *syn.* 391. 1. *Mor. hist.* 3. 179. *f.* 8. *t.* 6. *f.* 4.
Lateral florets male awned, middle involucre ciliate.
7. *Hordeum pratense.* *Meadow Barley-grass.*
Hudf. angl. 56. *Wither. arr.* 126. *ed.* 3. *v.* 2. *p.* 171.
Fl. rust. *t.* 108. *Hall. herb. n.* 1538. *Villars dauph.* 2. 174. *Fl. dan.* *t.* 630.
H. murinum β.—& *nodosum.* *Lin. spec.* 126.
Gramen fecalinum. Ger. *emac.* 29. *n.* 4. *Raii hist.* 1258. 2. *syn.* 392. *Mill. dict. n.* 7. *Vaill. par.* *t.* 17. *f.* 6.—*majus* & *minus.* *Park. theat.* 1144. 7.—*minus pratense.* *Mor. hist.* *f.* 8. *t.* 2. *row.* 1. *f.* 6.
G. spica fecalina. *Baub. prodr.* 57.
G. spicatum fecal. minus. *Scheuch. agr.* 17.
All the florets awned, the lateral ones male, all the involucre rugged.
8. *Hordeum maritimum.* *Marsh Barley-grass.*
Wither. arr. 127. *ed.* 3. *v.* 2. *p.* 172. *Vabl. symb.* 2. 25. *Fl. rust.* *t.* 44.
H. maritimum. *Hudf. angl.* 57.
H. imrinum. *Forfk. cat.* 19. *n.* 52.
H. geniculatum. *Allion. pedem. n.* 2274. *t.* 91. *f.* 3.
G. fecalinum palustre & *maritimum.* *Raii hist.* 1258. *syn.* 392. 3. *Scheuch. agr.* 18. *Mor. hist.* *t.* 6. *f.* 5.
G. hordeo disticho simile. *Baub. pin.* 9. 3. *Reliqu. rudb. t.* 12. *f.* 3.
All the flowers awned, the lateral ones male, involucre rugged, the interior ones of the males semilanceolate.
9. *Hordeum jubatum.* *Long-bearded Barley-grass.*
Lin. spec. 126. *syn.* 126. *Reich. i.* 238.
Elymus crinitus. *Schreb. gram.* 2. 15. *t.* 24. *f.* 1.
Gramen hordeaceum, spica aristis longissimis circumvallata. *Scheuch. agr.* 20. *Buxb. cent.* 1. 33. *t.* 52. *f.* 1. (bad).
Awns and involucre bristle-shaped and very long.]

DESCRIPTIONS, &c.

1. The first sort is the common Spring Barley, which is principally cultivated in England; of this the farmers make two sorts, viz. the common and rath-ripe Barley, which are the same: for the rath-ripe has only been an alteration, occasioned by being long cultivated upon warm gravelly lands. The seeds of this, when sown in cold or strong land, will the first year ripen near a fortnight earlier than the seeds taken from strong land; therefore the farmers in the vales, generally purchase their seed Barley from the warm land; for if sowed in the vales two or three years, it will become full as late in ripening as the common Barley of their own product; and the farmers on the warm land are also obliged to procure their seed Barley from the strong land, otherwise their grain would degenerate in bulk and fulness, which by thus changing is prevented. This sort of Barley is easily distinguished by the two orders of beards, or awns, which stand erect; the chaff being also thinner than that of the second and fourth sorts, is esteemed better for malting.

2. The second sort is rarely cultivated in the southern parts of England, but in the northern counties, and in Scotland, is generally sown, being much hardier than the other species, so will bear the cold; this has its grains disposed in six rows: the grain is large and plump, but it is not so good for malting, which is the reason for its not being cultivated in the southern parts of England, where the other sorts, which are much better for that purpose, thrive well.

3. The third sort is the long-eared Barley, which is cultivated in many parts of England, and is an exceeding good sort; but some farmers object to it because they say the ears being long and heavy, it is more apt to lodge; this has the grains regularly ranged in a double row, lying over each other like tiles on a house, or the scales of fishes. The husk, or chaff of this Barley is also very thin, and is much esteemed for malting.

4. The fourth sort is usually called Sprat Barley; this has shorter and broader ears than either of the other sorts; the awns, or beards, are longer, and the grains are placed closer together, and the awns being long, the birds cannot so easily get out the grains; this seldom grows so tall as the other species, and the

straw being shorter and coarser, is not very good fodder for cattle.

1. In Spring Barley the lower flowers are apt to be imperfect. The spike is as it were distich, though there are several rows. In all the flowers the two glumes or chaffs of the calyx are shorter than the flower, awl-shaped, and end in a short awn or beard. The outer corolline chaff is much hollowed, with the sides folded in, the back ciliated, and the tip continued into an awn three inches in length: the inner chaff is awnless^a.

It is not known where this or any other sort of grain grows wild. Cardan pretended that Barley was a native of Athol in Scotland! Reidesel says the same of Sicily: and it has lately been affirmed to be found on the banks of Samara, a river of Tartary. Dioscorus Siculus ascribes the first culture of Barley to Osiris, who discovered it in a wild state. The ancients fed their horses with barley, as we do with oats. It was eaten also in bread by the lower sort of people; and the Gladiators were called *Hordearii*, from their feeding on this grain^b. In some of the southern parts of Europe they have two crops of Barley; one sown in autumn and cut in May, and another sown in spring and cut in autumn. In some of the northern parts of Europe it is called *Korn* exclusively; and it is much cultivated there on account of its taking a less time to ripen than other sorts of grain. In Lapland fifty-eight days only, or about two months, elapse, between the sowing and the cutting it. But it is the second sort which is usually sown in northern climates. Rath-ripe or Patney Barley is said to have been returned to the barn in England in two months.

β. Siberian Barley, called in German *Himmelsgerste* or *Himmelskorn*; in Danish, *Himmelsbyg* or *Thorebyg*; in Swedish, *Himmelskorn*; in French, *Orge celeste*; was introduced in 1768 by Mr. Haliday, who received a wine-glass full of this grain on the 25th of May 1767, from a member of the society of Arts, &c. at London, with this information, that a foreign nobleman had presented that society with about a pint of it, and that it came from Siberia. In 1768, Mr. Haliday, having near a quart of the seed, sowed the whole in drills, the first week in May. The produce was hung up in sacks in the ear, and in the beginning of April 1769 was threshed out, and produced near a bushel. On the 19th and 20th of that month it was sown in drills, and was reaped on the 12th and 15th of August. The produce was about thirty-six bushels of clean corn.

Two bushels, weighing 132 pounds, being sent to the mill, yielded 80 pounds of fine flour, equal to London seconds, 40 pounds of a coarser sort, and 12 pounds of bran superior to wheat bran. The best flour made excellent bread, sufficiently light, and so retentive of moisture, as to be as good twelve or fourteen days after baking, as wheaten bread on the fourth day. And 12 pounds of barley, and the same quantity of wheat flour, equally fine, being made into bread, and baked in the same oven, the wheaten loaf weighed 15, and the barley 18 pounds. Two bushels of it being malted, were brewed into a half barrel of ale and another of small beer, both of which proved very good^c.

Siberian Barley has a broader blade of a much deeper green than common Barley, at first coming up; the ears are shorter, having only from five to nine grains in length, whereas those of the common sort have from nine to thirteen; and in all stages it is a fortnight forwarder than common Barley. The two sorts being sown in the same field on the 28th of April 1774, three bushels of each, the common Barley produced thirty-six bushels and a half weighing 52 pounds each, and the Siberian produced thirty-two bushels weighing 58 pounds each: but the soil was very dry, and much inclined to a gravel, which was much to the disadvantage of the latter, for it requires a richer land^d.

2. Winter or Square Barley, commonly called Bear Barley, Bere or Big, having six rows of grain, has a much thicker spike than common or spring Barley; but it is also much shorter: the number of grains

^a Haller.^b Plin. 18. c. 7.^c Hunter's Essays, p. 133.^d Bath papers, 1. 108.

however in an ear or spike is greater, in the proportion of at least three to two. I have frequently counted forty-two grains, when common Barley had only twenty-two. The ear is seldom more than two inches in length; it is square, with two rows of grains on two of the sides; on the other two a single row of grains runs up the middle, so that the former rows are awned only laterally, and the latter on the sides and along the middle also. The lower flowers are imperfect in both. The outer valve of the corolla has a rough awn or beard from four to six inches in length.

This species is seldom cultivated in the southern parts of England, the grain, though large and plump not being esteemed so good for malting as common Barley: but in the northern counties and in Scotland it is generally sown, because it will bear the cold much better. In some of the more southern parts of Europe it is sown in autumn.

3. Common or Long-eared Barley differs essentially from the two others. The spike or ear is very long, flattened, or transversely greater in breadth than thickness, with a double row of defective or male, and consequently barren florets on each flat side, and a single row of fertile florets at each edge. The valves of the calyx, outer glume, husk or chaff are linear, and shorter by half than the corolla or inner chaff, which ends in an awn or beard which is straight and sixteen times its own length, when ripe it is coriaceous, angular, and continues close about the grain; when this is taken off the grain appears of an ovate form, grooved and angular.

β. Mortimer says that they cultivated in Staffordshire *Tritico-Spellum*, a sort of naked Barley or Wheat-Barley, the ear shaped like Barley, but the grain like Wheat; that it is much sown at Rowley, Hamstall, and Redmore, where they call it French Barley; that it makes good bread, and good malt, and yields a good increase. No mention being made of this grain in Mr. Pitt's View of the Agriculture of this County, drawn up for the consideration of the Board of Agriculture, and printed in 1796; we may conclude that it is no longer cultivated there.

Villars describes it as having a larger, finer grain, the weight and size of Wheat, and separating from the husk, whence its name; he adds that it is nicer respecting soil, and more difficult to cultivate, but yields a larger produce, and is of a better quality than common Barley.

4. Sprat or Battledore Barley, differs from the common sort in being of a lower stature, and in having a shorter, broader ear, with closer grains, standing out more from the rachis, and having shorter awns. Between the two rows of fertile flowers, are two other rows of male or barren flowers, as in the preceding species, but more conspicuous.

Barley in Greek *Κριθή*; in Latin *Hordeum*; in German is *Gerste*; in Dutch, *Gerst*; in Danish, *Byg*; in Swedish, *Biugg* or *Korn*; in French, *Orge*; in Italian, *Orzo*; in Spanish, *Cebada*; in Portuguese, *Cevada* or *Sevada*; in Russian, *Jetschmen* or *Jesmin*.

5. Bulbous Barley-grass is so named from its bulbous roots, wrapped up in whitish or brownish, broad, membranaceous, fibrous coats, and having strong fibres hanging from them. Culms two or three, from a foot or eighteen inches to three and even four feet high in different situations, with four or five joints; the sheaths of the lower leaves hirsute with short close hairs; of the upper smooth and striated, ending in a thin, white, subdiaphanous membrane (or ligule) about half a line in length. Leaves a span or a foot, sometimes only a hand long, a line and a half or two lines wide, rough and finely toothletted at the edge, having very short hairs on both surfaces, but not so many on the lower. Spike narrow, three or four, sometimes near six inches long, and three or four lines broad. The two lateral florets in each set are on a pedicel half a line in length, and are themselves near half an inch long, with awns near an inch in length, flattened at bottom: the middle floret is sessile, about five lines in length, with the outer

glume ending in an awn usually more than an inch long, and at the base two other awns eight or ten lines long^a.

Native of Italy and the Levant. Scheuchzer found it about Rome in May. Introduced here in 1770, by Mons. Richard¹.

6. Common Wall Barley-grass, Way-Barley, Way-Bennet, or rather Way-Bent; called also Wild Rie or Rie-grass, has an annual root; numerous stems a foot or eighteen inches in height, round, smooth, frequently branching at bottom, where they are procumbent, and bend at the joints; these are about five in number, swell out, and are either paler than the rest of the culm or tinged with purple; the upper part of them is erect. Leaves from three or four to six inches in length, and a quarter of an inch in breadth, covered with a soft down on both sides. Spikes from two to three inches long, pale green: the middle floret of each set is fertile and sessile; the lateral ones are male and on very short pedicels; all three are alike in size and shape, or sometimes the latter are a little smaller. The outer valve of the corolla ends in an awn an inch or an inch and half in length, and rough when handled from the point downwards; the inner valve is truncate at the end, and slightly emarginate, from the base springs a straight awn, the length of the filaments.

This is a very common grass by the side of paths and under walls, whence its trivial names both in Latin and English. It flowers during the greater part of the summer. In the isle of Thanet it is said to be well known to the innkeepers by the name of Squirrel-tail grass. They find that if horses feed on it some time, the beards stick into their gums, and make them so sore, that they are in danger of being starved. The gentleman who related this fact, added, that on the road he had a bill put into his hand, signifying, that at such an inn travellers might depend on having hay without any mixture of Squirrel-tail grass^k.

Wall Barley-grass never being found in the body of a meadow, it may be doubted whether it is not rather the next species which produced this bad effect, and if so that must not be recommended for culture.

It is an old notion that this Grass is Barley degenerated, though it bears more resemblance to Rie. Haller seriously combats this error, but it is surely now too vulgar an one to be necessary to contradict it.

Wall Barley-grass in German is *Mansegerste*, *Gerstengras*, &c. In Dutch, *Muurgerst*, *Bastardgerst*, *Muizenkorn*. In Danish, *Byggræs*, *Fandens-ax*. In Swedish, *Villkorn*. In French, *Orge des murs*.

7. Meadow Barley-grass, from its resemblance to Rie named by Johnson Rie-grass, was supposed by Linneus to be nothing more than a variety of the preceding. Ray observed long since, that it differs in being much taller, and having shorter spikes and awns. Its height is almost double that of the other. The spike is more green, only half the length of that, square, with the awns of the calyx as long as those of the corolla. The anthers also are three times as long as in *H. murinum*, and yellow, whereas in that they are blueish, and almost square. None of the involucre are ciliate. The middle floret is smooth; the two lateral ones, though they have a pistil as well as stamens, yet being very minute, they never come to maturity. Our English authors mark it as perennial; Mons. Villars takes it to be annual.

Native of Sweden, Denmark, France, Switzerland, England, and probably most parts of Europe, in good meadows, of which it sometimes forms a considerable portion.]

Mr. Miller affirms that this is a very good grass for pastures, and has perennial roots, with leafy stalks that do not become stiff and harsh: and that, if duly rolled the roots will mat and form a very close sward. [It is however a late grass, and is thought not to be so productive as some others. For *Ray-grass*, which is sometimes, but erroneously, called Rie-grass, and is very different from this, see *Lolium perenne*.

^a Gartner.

^f Husbandry, p. 102. edit. 2.

^g Ray hist. and Bauh. hist.

^h Scheuchzer.

ⁱ Hort. kew.

^k Curtis.

8. At first sight this resembles the common Wall Barley-grass, inasmuch that it might be doubted, until experiments are made by culture, whether it be a distinct species; because salt water and sea air make grasses put on a different appearance. It differs however in having shorter pyramidal spikes, made up of a greater number of florets, more crowded together, with the awns more standing out, those at bottom longest, and becoming gradually shorter towards the top of the spike¹. The involucres are roughish, neither ciliate nor scored. Florets smooth, the middle one in each set sessile, the lateral ones on very short pedicels at the base of their involucre, and their awns somewhat longer than the floret^m.

Native of Barbary and the southern parts of Europe, and of England, in salt marshes near the sea; flowering in June and July.

This is marked as annual both by English and foreign botanists, and is described by Allioni under the name of *Hordeum geniculatum*. He says it differs evidently from the next species, and that in cultivation it acquires a loftier culm, with a spike twice or thrice as long as in the wild plant, but that the character of the incurved culm continues.

9. This has the habit of *H. murinum*, but the involucres and bristle-shaped awns are four times the length of the whole spike, which gives this grass a singular appearanceⁿ.—The stem-leaves are four or five inches long, and a line or a line and half wide, villose with short hairs above, below especially towards the top rough, if drawn downwards through the fingers. Awn four, five, or near six inches in length^o.

Linneus, in the species plantarum, assigns Canada for the native place of this grass, and Kalm for the discoverer. In the 13th and 14th editions of the systema vegetabilium it is said to be a native of Smyrna: and Scheuchzer says that it was sent from Smyrna by Sherard. In the catalogue of the royal garden at Kew it is assigned to Canada and Hudson's Bay; and is said to have been introduced in 1782, by the Hudson's Bay Company. In the latter work it is marked as biennial. It is surely improbable that of grasses so nearly allied as these some should be annual, others biennial, others perennial. Schreber refers this species to Elymus, as *Hordeum sylvaticum* is by most botanists, and also *Triticum caninum*.]

PROPAGATION AND CULTURE.

Barley.

1—4. All the sorts of Barley are sown in the spring of the year, in a dry time; in some very dry light land, Barley is sown early in March; but, in strong clayey soils, it is not sown till April, and sometimes not until the beginning of May; but when it is sown late, if the season does not prove very favourable, it is late in autumn before it is fit to mow, unless it be the rath-ripe sort, which is often ripe in nine weeks from the time of sowing.

Some sow Barley upon land where Wheat grew the former year; but when this is practised, the ground should be ploughed the beginning of October in a dry time, laying it in small ridges, that the frost may mellow it the better, and this will improve the land greatly; and if this can be ploughed again in January, or the beginning of February, it will break and prepare the ground better; then in March the ground is ploughed again, and laid even where it is not very wet; but in strong wet lands the ground should be laid round, and the furrows made deep to receive the wet. When this is finished, the common method is to sow the Barley-seed with a broad cast at two sowings; the first being harrowed in once, the second is harrowed until the seed is buried; the common allowance of seed is four bushels to an acre. This is the quantity of grain usually sown by the farmers; but if they could be prevailed on to alter this practice, they would soon find their account in it; for if less than half that quantity is sown, there will be a much greater produce, and the corn be less liable to lodge, as I have many years ex-

perienced; for when corn or any other vegetable stands very close, the stalks being drawn up weak, are incapable to resist the force of winds, or bear up under heavy rains: but when they are at a proper distance, their stalks will be more than twice the size of the other, and are seldom laid. I have frequently observed in fields where there has been a foot-path through the middle, that the corn which has stood thin on each side the path has stood upright, when all the rest on both sides has been laid flat on the ground: and whoever will observe these roots of corn near the paths, will find them tiller out (i. e. have a greater number of stalks) to more than four times the quantity of the other parts of the field. I have seen experiments made by sowing Barley in rows across divers parts of the same field, and the grains sowed thin in the rows, so that the roots were three or four inches asunder in the rows, and the rows at a foot distance; the intermediate spaces of the same field were at the same time sown broad cast in the usual way; the success was this, the roots which stood thin in the rows tillered out from ten or twelve, to upward of thirty stalks on each root, the stalks were stronger, the ears longer, and the grains larger than any of those sown in the common way; and when those parts of the field where the corn was sown in the usual way have been lodged, these parts sown thin have supported their upright position against wind and rain, though the rows have been made not only lengthways, but cross the lands, in several positions, so that there could be no alteration in regard to the goodness of the land, or the situation of the corn; therefore where such experiments have been frequently made, and always attended with equal success, there can be no room to doubt which of the two methods is more eligible; since if the crops were only supposed to be equal in both, the saving more than half the corn sown is a very great advantage, and deserves a national consideration, as such a saving, in scarce times, might be a very great benefit to the public. I know the farmers in general are very apt to complain if their corn does not come up so thick as to cover the ground green in a short time, like Grass fields: but I have often observed, that when from the badness of the season it has come up thin, or by accident has been in part killed, their corn has been stronger, the ears longer, and the grain plumper, so that the produce has been much greater than in those years when it has come up thick; for the natural growth of corn is to send out many stalks from a root, and not rise so much in height; therefore it is entirely owing to the roots standing too near each other, when the stalks are drawn up tall and weak. I have had eighty-six stalks upon one root of Barley, which were strong, produced longer ears, and the grain was better filled than any which I ever saw grow in the common method of husbandry, and the land upon which this grew was not very rich: but I have frequently observed on the sides of hot-beds in the kitchen-gardens, where Barley-straw has been used for covering the beds, that some of the grains left in the ears having dropped out and grown, the roots have produced from thirty to sixty stalks each, and those three or four times larger than the stalks ever arrive at in the common way: but to this I know it will be objected, that although upon rich land in a garden, these roots of corn may probably have so many stalks, yet in poor land they will not have such produce; therefore unless there is a greater quantity of seeds sown, their crop will not be worth standing, which is one of the greatest fallacies that can be imagined; for to suppose that poor land can nourish more than twice the number of roots in the same space as rich land, is such an absurdity, as one could hardly suppose any person of common understanding guilty of; and yet so it is, for the general practice is to allow a greater quantity of seed to poor land, than for richer ground; not considering that where the roots stand so close, they will deprive each other of the nourishment, and starve themselves, which is always the case where the roots stand close; and this a person may at first sight observe, in any part of the fields where the corn happens to scatter when they are sowing it; or in places where, by harrowing, the seed is drawn in heaps, those patches will

¹ Ray.

^m Withering.

ⁿ Linn. spec.

^o Scheuchzer.

will starve, and never grow to a third part of the size as the other parts of the same field; and yet common as this is, it is little noticed by farmers, otherwise they surely would not continue their old custom of sowing. I have made many experiments for several years in the poorest land, and have always found that all crops which are sown or planted at a greater distance than usual, have succeeded best; and I am convinced, if the farmers could be prevailed on to quit their prejudices, and make trial of this method of sowing their corn thin, they would soon see the advantage of this husbandry.

When the Barley is sown, the ground should be rolled after the first shower of rain, to break the clods and lay the earth smooth, which will render it better to mow, and also cause the earth to lie closer to the roots of the corn, which will be of great service to it in dry weather.

Where Barley is sown upon new broken up land, the usual method is, to plough up the land in march, and let it lie fallow until june, at which time it is ploughed again, and sown with Turneps, which are eaten by sheep in winter, by whose dung the land is greatly improved; and then in march following the ground is ploughed up again, and sown with Barley as before.

There are many people who sow Clover with their Barley, and some have sown Lucerne with Barley; but this method is not to be commended, for where there is a good crop of Barley, the Clover or Lucerne must be so weak as not to pay for standing; so that the better way is to sow the Barley alone without any other crop among it, and then the land will be at liberty for any other crop, when the Barley is taken off the ground; but this practice of sowing Clover, Rye-grass, and other Grass-seeds, with corn, has been so long and universally established among farmers, that there is little hope of prevailing with those people to alter a custom which has been handed down to them from their predecessors, although there should be many examples produced, to shew the absurdity of this practice.

When the Barley has been up three weeks or a month, it will be a very good method to roll it over with a weighty roller, which will press the earth close to the roots of the corn, and thereby prevent the sun and air from penetrating the ground, which will be of singular service in dry seasons; and this rolling of it before it stalks, will cause it to till out into a greater number of stalks; so that if the plants should be thin, this will cause them to spread so as to fill the ground, and likewise strengthen the stalks.

The time for cutting Barley is, when the red colour of the ears is off, and the straw turns yellow, and the ears begin to hang down: in the north of England they always reap their Barley, and make it up in sheaves, as practised here for Wheat, by which method they do not lose near so much corn, and it is also more handy to stack; but this method cannot so well be practised where there are many weeds amongst the corn, which is too frequently the case in the rich lands near London, especially in moist seasons; therefore when this is the case, the Barley must lie on the swarth till all the weeds are dead; but as it is apt to sprout in wet weather, it must be shaken up, and turned every fair day after rain to prevent it. When it is carried in, it should be thoroughly dry, otherwise if it be stacked wet, it will turn musty; or if too green, it is subject to burn in the mow. The common produce of Barley, is two and a half, or three quarters on an acre, but I have sometimes known six or seven quarters on an acre.

[Time of sowing Barley.]

The farmer is governed by seasons, and by other necessary work which he may have to perform; but when he can, to sow early is one of the most important articles in the culture of Barley. If three ploughings can be given in time, it is best to get the seed in some time in march at farthest; and some farmers, rather than defer the sowing, will throw in the crop on one earth. In Norfolk they commonly sow on their light lands in april, and on the moist lands in may;

and they think that where they are much subject to weeds, they have the best crops when they sow late. Early sowing, however, has been gaining ground for some years past. And it appears from an experiment accurately made by a very intelligent cultivator, that more grain was produced from sowing in january than at any other time. The land was a deep sand, valued at six or seven shillings the acre; it had been under clover, and was folded the same as for wheat, in november. Two bushels of Barley were sown on the 16th of november, 1785, and harrowed in, upon one earth only; and the same quantity was sown the middle of every month till may 1786 inclusive. The first sown came up a week sooner than the wheat sown on the same day by the side of it, and was very flourishing till the first sharp frost set in, which damaged the blade, but did not seem to affect the root. The other sowings had two earths; one cast, or half the seed, was ploughed in, and the other half harrowed in. The second sharp frost killed some of the second sowing, and a good deal of the first; but both, together with that sown in january, seemed to suffer still more, by the sharp cutting winds in the month of march, when there was no snow to cover the blade. These three sowings, particularly the first, had their plants very much thinned by the frosts and winds; but the roots that were left stubbed very much in the spring, and had very long ears, with from thirty to thirty-six grains in each. The sowings in february and march lost few if any of their plants, and were both forward enough to be harvested on the same day with the three preceding sowings. That sown in april was full a fortnight later, and the last sown in may was entirely destroyed by rooks, there being no other sown so late in the neighbourhood. It would have been the same with the early sowings, had not the evil been guarded against. However advantageous therefore early sowing may be, yet neither this nor any other laudable practice will be of any avail in open fields, where lands are intermixed, unless where there is a general consent; and if one farmer only were to sow early, he must have as many keepers as he has pieces of land, and thus have a better crop than his neighbours at an expense which would turn it to his disadvantage. All the barley sown was of the Zealand stock, and the produce was as follows:

	Pecks.	Qrs.	Pints.		Coombs.	Bushels.	Pecks.	Quarts.
1. November	3	0	0		12	2	1	
				or on an acre				
2. December	3	0	1		12	3	1	1½
3. January	3	1	0		13	0	¾	
4. February	2	3	2		11	2	2½	
5. March	2	2	2		10	3	3½	1
6. April	2	0	2		8	3	2½	1

The whole land sown was seventy-two square yards, or little more than two thirds of an acre, and all the sowings were by the side of each other, on the same piece of land. Three swaths of each sowing, twelve yards in length, where the soil was most equal, were threshed out; and each parcel was dressed and measured into a sack separately as soon as threshed.

The following experiments were tried by the late Earl of Orford to ascertain the effect of early sowing.

The common management of the turnep husbandry in Norfolk has this evil in it, that the crop is kept for feeding so late in the spring, that the succeeding barley often suffers considerably, sometimes to the amount of the value of the turneps.

In 1785, twenty-three acres of turneps being fed off, barley was sown, three bushels and a half to the acre on the 7th of february, in the manner of wheat on the ridge; the land having been half ploughed, on to four-furrow ridges. Sharp frosts followed the sowing, and the seed laid five weeks before it appeared; but the crop received injury. It was reaped.

The produce was five quarters, one bushel, and one peck on an acre; a very good and short sample.

In 1787, thirty acres were sown as before, on turnep land, and on ridge and furrow; beginning on the 6th of february. The produce five quarters one peck on an acre; the sample short and good, weighing fourteen stone seven pounds the sack.

It has been said, if turneps be fed off so early, what is to be done for food later? The right time certainly to eat a crop is when it will yield the most food, and go the farthest. Turneps are often kept till they are good for nothing, and it is no uncommon thing to have them given away to be fed off, for what the farmers call time for barley; that is in april, and even the beginning of may. By this contrivance the turneps are worth nothing, the land is impoverished by them, and there is no chance of good barley. Would it not be much better for the farmer to have other resources for his sheep, than run such great hazard, and suffer such certain loss? Would it not be better never to venture barley after late-fed turneps, but to reserve such land for cabbages? Yet even where lands are fed off by the end of january, and in the case of any other preparation for barley, the farmers still leave their lands till their common feed-time (april or may), that by giving more tillage, they may get worse crops.

In that part of Essex where they understand the Barley-culture well, they despair of a great crop, if the seed is not in the ground in march; but they sow as soon as their lands are dry enough, from the last week in february to the middle of april. Mr. Young observes on this practice, that early sowing is a point almost sufficient to turn the scale in favour of bad land, in comparison with good ill-managed. In Suffolk they generally give three spring stirrings, by which means it is common to see them sowing Barley in may; but no great or good crops can be gained so. When Barley is to follow turneps, the best farmers in many seasons watch the lucky moment of ploughing their turnep lands, when they will break up into fine mould; one earth will then bring them into crumbling order, and the harrows make them as fine as a garden: in such a case the seed is got in early, and the land at the same time is in good tillage.

After all, the ripening of the crop will depend upon the time, not of the seeds being sown, but of their vegetating; and therefore unless the season be propitious, and the land in proper order, early sowing of itself will avail little.

In Norfolk they have a maxim which shews that they attended to the foliation of trees as a direction for the proper time of sowing Barley, long before Linneus recommended it.

"When the oak puts on his gosling gray,
'Tis time to sow barley night and day."

That is, when the oak puts on that gray appearance, which it does at the time the buds are bursting, a few days previous to the expansion of the leaves, no time should be lost in getting the seed-barley into the ground.

Mr. Marshall prefers the flowering of the Hawthorn to the leafing of the Oak for this purpose; and says, that the Barley should vegetate while the hawthorn is blowing.

Soil proper for Barley.

The best soil for Barley is that which is dry and healthy, rather light than stiff, but yet of sufficient tenacity and strength to retain the moisture. If the land be poor, it should be dry and warm, and when so, will often bear better corn than richer land in a cold and wet situation. Much Barley, however, is grown on heavy lands, both after wheat and on a fallow.

Succession and Preparation of Land.

Barley usually succeeds wheat or turneps, sometimes Vetches and other crops, or is put in on a fallow, or on turf. After wheat, the soil is winter-fallowed by

three ploughings; the first lengthways in november; the second across in march; the last or seed-ploughing lengthways. Between the two last ploughings the soil is harrowed, and the quick, if any, destroyed.

In Norfolk, when wheat-sowing is finished, the farmer begins to *scale* in his wheat-stubbles for a winter fallow. If the land lie in narrow work, the ridgelets are split; if in warps, the ground is likewise ploughed clean, but very fleet. The beginning of march the land is harrowed, and presently after the wheat-stubbles are taken up by a full-pitch cross-ploughing; or, if the season be wet, and the soil heavy, he reverses the ridges. In april he harrows, and begins stirring for barley, with another full-pitch ploughing, lengthways; generally gathering the soil either into five-pace or ten-pace warps, in which it lies until seed-time; when it is harrowed, rolled, sown; ploughed fleet, reversing the warps, and *slading* down the furrows; so as to render the entire surface as even and level as may be.

After turneps, the soil is generally broken up as fast as the turneps are got off; if early in winter, by rice-balking; if late, by a plain ploughing. The general practice, if time will permit, is to plough three times; the first fleet or shallow, the second full-pitch, the last a mean depth, with which the seed is ploughed in.

But when it is late before the turneps are got off, sometimes the ground is only ploughed once, and the seed sown above; but more frequently it is broken by three ploughings, as above, though perhaps there is not more than a week to perform them in. Such is the practice in Norfolk, where farmers in general are masters in the art of cultivating Barley. They seem fully aware of the tenderness of this plant in its infant state, and of its rootlings being unable to make the proper progress in a compact or cold soil; they therefore strive by every means in their power to render the soil open and pulverous. To this intent it is sometimes two-furrowed, and even a fourth earth is given, especially in a cold wet season.

Nor is this caution confined to turnep-barley, but should be extended more or less to stubble-barley, which however does not require so much care; the soil in this case being kept open in some measure by the indigested stubble, and the roots of grasses and other weeds, which a turnep-fallow is, or ought to be free from. This perhaps may account for the superiority of stubble-barley over that which is produced by a turnep-fallow, though ever so well timed and well manured.

In sowing Barley after a fallow they plough three times at least. At the first ploughing, the land is laid up in small ridges, and left so during the winter, for the frost to mellow it; the second ploughing should be the beginning of february. In march they split the ridges, and lay the land as flat as possible, at the same time harrowing it fine. But in strong wet lands they lay it round, and make deep furrows to receive the water.

In Essex they plough five times, four in the fallow year, throwing the land on to the ridge for winter by the fourth; then they take the first opportunity of hard frosts to carry on their composts, at the rate of twenty or thirty loads to the acre; these are farm-yard dung mixed up with turf; after this, they take the first opportunity of the lands being dry enough to plough and sow the Barley, from the last week in february, to the middle of april; but if the seed is not in the ground in march, they despair of a great crop. This barley-culture is very good; it is an excellent practice to plough and sow in the spring, instead of giving preparatory ploughings when the seed should be in the earth.

When Barley is put on turf, or after lay, as Clover, &c. the turf is generally broken by a winter-fallow, and the soil treated in other respects, as after wheat.—In very light dry soils it may be right to break the flag as little as possible, provided the grass be killed; in this case they do not break up the turf till after

^r Young's ann. 9. 385.

^s Six weeks tour, 78, 82.

^t Ibid. p. 278.

^u Marshall's Midl. Counties, 2. 211.

^x Marsh. Norfolk, 1. 238.

^y Midl. 2. 218.

^z Bath papers, 2. 96.

^a Marsh. midl. 1. 241.

^b Marsh. Norf. 1. 235.

^c Bath papers, 2. 97.

^d Young's Six weeks tour, 77.

Christmas. With this process they sow the Barley above furrow^e.

Barley is seldom manured for, except in the last case, when sown after lay; after turneps no manure can be requisite; nor after wheat, if this has been manured for^f. On a fallow, it is manured for as wheat.

Quantity of Seed, Preparation for, and Method of Sowing.

Many farmers sow four bushels of seed on an acre, which is too much; and some few sow no more than two bushels, which is generally allowed to be too little, after all that Mr. Miller has said in favour of thin sowing. Four bushels is very general, but in some places, three bushels and a half, and in others three bushels is the average or medium quantity of Barley sown.

The following experiments seem to confirm Mr. Miller's theory of sowing thinner on poor soils. On an acre of poor sand worth 3s. 6d. an acre, were sown two bushels of barley: on the next adjoining acre, three bushels: on the next four bushels. The result was, that the crop was best from two bushels, next best from three, and the worst from four.

On sand worth 7s. an acre

2 bushels produced	4½ quarters.
3 —————	4¾
4 —————	3 qu. 7 bushels ^g .

In other soils, the produce has been found to be greatest from the greatest quantity of seed sown:

	Q.	B.	P.
4 bushels produced	3	7	0
3 to 4 —————	3	6	0
3 —————	3	0	2 ^h .

Again:—

2 to 3 bushels produced	32 bushels.
3½ to 4 —————	33
4½ to 5 —————	27 ⁱ .

Which proves that four bushels is the most that ought to be sown, and that scarcely needed a proof.

Brining and liming seed-barley previous to sowing it is a common practice; it is, however, reprobated by some, and liming is even thought to be prejudicial. Such as are of the latter opinion, recommend the sprinkling a little foot with the water, to secure the seed from insects. It is certain that Barley, which has been wetted for malting, and begins to sprout, will come up sooner in a dry seed-time; and in such a season this grain will not only lie long in the ground, but come up and ripen very unequally. To avoid these evils, to give the infant Barley an advantage over feed-weeds, and a chance of coming to market sooner, it seems a good method to steep the seed intended for sowing. This may be either in clean water, or the drainings of the dung heap, in which it may lie covered for twenty-four hours, or even longer, if the land be very dry, and there be no likelihood of rain for ten days. Sow the grain wet from steeping, without any thing, or with sifted wood-ashes. The sower must put in a fourth or a third more seed in bulk than he would of dry grain, the seed being swelled in that proportion; and he may expect it up in a fortnight at farthest^k.

The common method of sowing Barley is broadcast at two sowings; the first harrowed in once, the second twice. In Norfolk, almost all the Barley is sown under-furrow; that is, the surface having been smoothed by the harrow and roller, the seed is sown and ploughed under with a shallow furrow: a method admirably adapted to a light dry soil; and indeed to any soil which is light enough to produce good Barley, provided it be rendered sufficiently fine, and the seed be not buried too deep. However, if the season be

wet, and the soil cold and heavy, good farmers not unfrequently sow Barley above, as is the general custom in other counties. And this seems to be a reasonable practice; for in a dry spring and light land, sowing under seems most eligible; and in a cold spring, or when the soil is rough with clods, sowing above appears to be equally good management.

Cultivation after seeding.

Whether grass-seeds are sown over the Barley or not, the surface is harrowed presently after the last ploughing; and when the Barley is up, it is run over with a light roller, to break the clods, and close the earth about the roots, which is a great advantage to it in dry weather. In heavy lands, if the harrow leaves any clods, they are broken with the clotting-beetle, and if any quick is pulled up, it is destroyed^l.

When the Barley has been up three weeks or a month, it is a good way to roll it again with a heavy roller, which will prevent the sun and air from penetrating the ground to the injury of the roots. It will also cause the Barley to tiller out, so that if the plants be thin, the ground will be filled, and the stalks strengthened.

If the blade should grow too rank, mowing is a much better method than feeding it down with sheep; because the scythe takes off only the rank tops, but the sheep being fond of the sweet end of the stalk next the root, will often bite so close as to injure its future growth^m.

Drill sowing.

Grain sown by hand broadcast must fall at unequal depths; the seeds consequently sprout at different times: that which is buried where the earth is moist soon appears, whilst such as is near the surface lies baking in the heat of the sun, and does not vegetate till plentiful rains have moistened the soil: hence an inequality of crop, an accident to which Barley is particularly liableⁿ. Of the two common methods of sowing Barley, ploughing in buries too deep, and that sown under the harrow is too much exposed to birds; whereas by the Drill the seed is all deposited regularly at the proper depth^o.

To this advantage peculiar to drilling we may add, the saving which is made in the seed, and the opportunity which is given by this practice to keep the crop perfectly clean by hoeing. The quantity of seed used in drilling by different persons is from six pecks to three bushels; but it is bad economy in general to be too sparing of seed, and it is hardly advisable to sow less than two bushels on an acre. If, however, it should be thought proper to use even three bushels, it will still be a considerable saving. Drilling indeed cannot so well be practised on heavy soils; but it may have place on those which are light and friable, and therefore peculiarly adapted to Barley. Such soils are not injured by horses going repeatedly upon them, and being almost always under command, the horse-hoe may go over them whenever the farmer is most at leisure.

Dr. Hunter, in his Georgical Essays, gives us the following account of an experiment on this subject.—“In the spring of the year 1769, I sowed an acre of Barley, in equidistant rows, with the drill-plough, in a field which was sown with the same grain, and upon the same day, broad-cast. The broad-cast took three bushels per acre; the drill required only six pecks. The drills were eight inches asunder, and the seed was lodged about two inches within the soil. The drill acre was finished within the hour.

In the course of growing the drilled Barley seemed greener, and bore a broader leaf than the broad-cast. When the ears were formed throughout the field, the ear of the drilled Barley was plainly distinguished to be near half an inch longer than the broad-cast, and the grains seemed fuller and better fed.

Being at a loss to account for this, I dug up some roots of both, and found that the pipe of communication between the seminal and coronal roots of the

^e Marsh. Norf. 1. 237. & 2. 102.

^f Ibid. 1. 237.

^g Le Blanc in Young's ann. 1. 111.

^h Young's tour through the southern counties, 253.

ⁱ Northern tour, 4. 248.

^k Bath papers, vol. 2. 381. & 3. 304.

^l Marsh. Norf. 1. 241. Midl. 1. 242. Bath papers, 2. 99.

^m Bath papers, 2. 99.

ⁿ Hunter's Essay xvii.

^o Young's ann. 18. 312.

drilled Barley was considerably longer than in the broad-cast.

The produce of two hundred square yards of the broad-cast and drilled Barley was carefully housed, and afterwards threshed out. The drilled exceeded the other nearly one-fifth in measure, and weighed heavier, at the rate of two pounds in the bushel^p.

See more on this subject under Wheat in the article TRITICUM.

5, &c. For the culture of these see GRASS:

HORDEUM. See *Elymus* and *Triticum*.

HOREHOUND White. See *Marrubium*.

————— Bafe. See *Stachys*.

————— Black or Stinking. See *Ballota*.

————— Water. See *Lycopus*.

HORMINUM. See *Bartisa*, *Betonica*, *Melissa*, *Nepeta*, *Salvia*.]

HORN-BEAM, or HORN-BEECH TREE. See *Carpinus*.

[HORNED POPPY. See *Cheilidonium*.

HORNED RAMPION. See *Phyteuma*.

HORNWORT. See *Ceratophyllum*.

HORSE-BEECH. See *Carpinus*.]

HORSE CHESTNUT. See *Æsculus*.

[HORSE-EYE BEAN. See *Dolichos*.

HORSE-MINT. See *Mentha*.

HORSE-PIPE. See *Equisetum*.

HORSE-RADISH. See *Cochlearia*.

HORSE-SHOE VETCH. See *Hippocrepis*.

HORSE-TAIL. See *Equisetum*.

————— Shrubby. See *Ephedra*.

HOSPITA. See *Kleinkovia*.]

HOT-BEDS are of general use in these northern parts of Europe, without which we could not enjoy so many of the products of warmer climes as we do now; nor could we have the tables furnished with the several products of the garden, during the winter and spring months, as they are at present in most parts of England, better than perhaps in any other country in Europe: for although we cannot boast of the clemency of our climate, yet England is better furnished with all sorts of esculent plants for the table, much earlier in the season, and in greater quantities, than in the gardens of our neighbours, which is owing to our skill in Hot-beds.

The ordinary Hot-beds which are commonly used in the kitchen-gardens, are made with new horse-dung, in the following manner:

1st, There is a quantity of new horse-dung from the stable, in which there should be part of the litter or straw which is commonly used in the stable, but not in too great proportion to the dung, the quantity of this mixture must be according to the length of the bed intended; which, if early in the year, should not be less than one good load for each light; this dung should be thrown up in a heap, mixing therewith a few sea-coal ashes, some leaves of trees, and tan, which will be of service to continue the heat of the dung; it should remain for six or seven days in this heap; then it should be turned over, and the parts well mixed together, and cast into a heap again, where it may continue five or six days longer, by which time it will have acquired a due heat; then in some well sheltered part of the garden, dig a trench in length and width, proportionable to the frames you intend it for; and if the ground be dry, about a foot deep; but if wet, not above six inches; then wheel the dung into the opening, observing to stir every part of it with a fork, and lay it exactly even and smooth through every part of the bed; as also to lay the bottom part of the heap, which is commonly free from litter, upon the surface of the bed; this will prevent the steam from rising so plentifully as it would otherwise do. To prevent this, and the heat from rising so violently as to burn the roots of whatever plants are put into the ground, it will be a very good way to spread a layer of neats dung all over the surface of the horse-dung, which will prevent the mould from burning: if the bed is intended for Cucumbers or Melons, the earth should not be laid all over the bed at first, only a hill of earth should be first laid in the middle of each light

on which the plants should be planted, and the remaining space should be filled up from time to time, as the roots of the plants spread; but this is fully explained under those two articles. But if the Hot-bed is intended for other plants, then after the bed is well prepared, it should be left two or three days for the steam to pass off, before the earth is laid upon the dung.

In the making of these Hot-beds, it must be carefully observed to settle the dung close with a fork; and if it be full of long litter, it should be equally trod down close in every part; otherwise it will be subject to heat too violently, and consequently the heat will be much sooner spent, which is one of the greatest dangers these sort of beds may be liable to. During the first week or ten days after the bed is made, cover the glasses but slightly in the night, and in the day-time carefully raise them to let out the steam, which is subject to rise very copiously while the dung is fresh; but as the heat abates, the covering should be increased; otherwise the plants in the beds will be stunted in their growth, if not entirely destroyed. In order to remedy this evil, if the bed be very cold, you must put a pretty good quantity of new hot dung round the sides of it, which will add a fresh heat thereto, and cause it to continue a considerable time after; and as the spring advances, the sun will supply the loss of the dung's heat; but then it will be advisable to lay some mowings of Grass round the sides of the bed, especially if the nights should prove cold, as it often happens in May, which is many times, even at that season, very hurtful to tender plants on Hot-beds.

But although the Hot-bed I have described is what the kitchen-gardeners commonly use, yet those made with tanner's-bark are much preferable, especially for all tender exotic plants or fruits, which require an even degree of warmth to be continued for several months, which is what cannot be effected by horse-dung only. The manner of making these beds is as follows:

There must be a trench dug in the earth about three feet deep, if the ground be dry; but if wet, it must not be above a foot or six inches deep at most, and must be raised in proportion above ground, so as to admit of the tan being laid three feet thick. The length must be proportioned to the frames intended to cover it, but should never be less than eleven or twelve feet, but if it is twice that length it will be better, and the width not less than six, which is the least size of these beds to continue the heat. This trench should be bricked up round the sides to the above-mentioned height of three feet, paving the bottom with bricks to prevent the earth mixing with the tan, and should be filled in the spring with fresh tanner's bark (i. e. such as the tanners have lately drawn out of their vats, after they have used it for tanning leather) which should be laid in a round heap for a week or ten days before it is put into the trench, that the moisture may the better drain out of it, which, if detained in too great a quantity, will prevent its fermentation; then put it into the trench, and gently beat it down equally with a dung-fork; but it must not be trodden, which would also prevent its heating, by settling it too close; then you must put on the frame over the bed, covering it with the glasses, and in about ten days or a fortnight it will begin to heat; at which time you may plunge your pots of plants or seeds into it, observing not to tread down the bark in doing it.

A bed thus prepared, if the bark be new, and not ground too small, will continue in a good temper of warmth for two or three months; and when you find the heat decline, if you stir up the bark again pretty deep, and mix a load or two of fresh bark amongst the old, it will cause it to heat again, and preserve its warmth two or three months longer. There are many people who lay some hot horse-dung in the bottom of the trench, under the bark, to cause it to heat; but this is what I would never practise, unless I wanted the bed sooner than the bark would heat of itself, and then I would put but a small quantity of dung at bottom, for

for that is subject to make it heat too violently, and will occasion its losing the heat sooner than ordinary; and there will never be any danger of the bark's heating if it be new, and not put into the trench too wet, though it may sometimes be a fortnight or more before it acquires a sufficient warmth, but then the heat will be more equal and lasting.

The frames which cover these beds should be proportioned to the several plants they are designed to contain: for example, if they are to cover the Ananas or Pine-apple, the back part of the frame should be three feet and a half high, and the lower part fifteen inches, which will be a sufficient declivity to carry off the wet; and the back side will be high enough to contain the large fruiting plants, and the lower side will be sufficient for the shortest plants; so that by placing them regularly according to their height, they will not only have an equal distance from the glasses, but also appear much handsomer to the sight. And although many people make their frames deeper than what I have allotted, yet I am fully persuaded, that where there is but height enough to contain the plants, without bruising their leaves, it is much better than to allow a larger space; for the deeper the frame is made, the less will be the heat of the air inclosed therein, there being no artificial warmth but what the bark affords, which will not heat a large space of air; and as the Pine-apple requires to be constantly kept very warm, in order to ripen the fruit well, so it will be found upon trial, that the depth I have allowed will answer that purpose better than a greater.

But if the bed be intended for taller plants, then the frame must be made in depth proportionable thereto; but if it be for sowing seeds, the frame need not be above fourteen or sixteen inches high at the back, and seven inches deep in the front, by which means the heat will be much greater; and this is commonly the proportion allowed to the frames usually made use of in the kitchen-gardens. As to their length, that is generally according to the fancy of the owner; but they commonly contain three lights each, which is in the whole about eleven feet in length, though sometimes they are made to contain four lights; but this is too great a length for the boxes, for the frames thus made are not so handy to remove as when they are shorter, and are more subject to decay at their corners. Some, indeed, have them to contain but two lights, which is very handy for raising Cucumber and Melon plants while young; but this is too short for a Bark-bed, as not allowing room for a proper quantity of bark to continue a warmth for any considerable time, as was before-mentioned; but for the other purposes, one or two such frames are very convenient for common dung-beds.

As to those frames which are made very deep, it is much the better way to have them made to take asunder at the four corners, so that they may be removed with ease; otherwise it will be very difficult to take the frame off, when there is occasion to put in new bark, or take out the old.

[The use of Hot-beds is of very long standing in our gardens; directions for making them having been given by Gerarde in 1597, in his chapter on Cucumbers. But covering them with glasses is of more modern invention. "In the midst of april," says he, "or somewhat sooner, if the weather be any thing temperate, you shall cause to be made a bed or bank of hot and new horse dung taken forth of the stable, and not from the dunghill, of an ell in breadth, and the like in depth or thicknes, of what length you please: the which bancke you shall cover with hoopes and poles, that you may the more conveniently cover the whole bed or bancke with mats, olde painted cloth, strawe or such like, &c."

Hot-beds do not seem to have been known to Thomas Hyll, who published the profitable Arte of Gardening in 1593: for in treating of Melons, Cucumbers and Gourds, "to have them timely, he directs fine sifted earth to be put into an old basket or deepe earthen pan, and the same well mixed with dung, and after to set the same abroad in warme and sunny daies, and in a smal raine, but at the setting

"of the sun, to set the same againe under some covert, whiles untill all the frosts and cold season be past. And after that when a fair day commeth, then to set the whole pan or basket to the brim in the earth."

When glasses for covering Hot-beds were first introduced, I am not able to say. It is certain that they were not known to Parkinson, whose two books were published in 1629. and 1640; and that they were in common use long before the end of the last century.

Hot-beds should be in a piece of ground which is dry, and in a sunny exposure, fenced in either by walls or good ship-planks, ten feet high to the north, and six feet high to the south, apart from the rest of the kitchen garden, and as near to the stable dung-heap as possible, to avoid labour and dirt in barrowing. Sixty feet in breadth, and a hundred feet in length will be extent sufficient of ground for winter-framing for Mushroom-beds; for forcing Asparagus, Peas, Kidney-beans, Strawberries, Radishes, Salad-herbs; early Cucumbers and Melons; Annuals for the flower-garden; Perennials and Shrubs brought forwards, as Pinks, Carnations, Bulbous plants, Lily of the Valley, Roses, Honeyuckles, &c. &c. And under the south fence forcing frames for fruit: the management of which is directed under these several articles.

If the dung for making the Hot-beds be new and strong, there is no necessity for mixing sea-coal ashes, leaves of trees, or tan, as Mr. Miller directs: these are of use only for strengthening the heat, and rendering it more durable, when the dung is in some degree exhausted by having been too long in the dung-heap. In fresh dung, they are apt to make the heat too fierce and burning.

Though a trench be usually dug for the Hot-bed, in order to have a part of it underground, yet it is more adviseable for early Hot-beds, that must have a lining of fresh dung to keep up the heat, to have them entirely above ground, that they may have the full advantage of the lining.

Hot-beds that are to be covered with common frames should be four feet and a half or five feet in breadth, and three feet and a half or four feet high when made in winter: in spring, the first Hot-beds in march may be three feet; the second in april two feet and a half; and the third in may two feet or even eighteen inches towards the end of the month.

The covering of earth over the dung should be from five to eight or ten inches for most purposes: when pots are to be plunged into the beds, this covering must be of a depth sufficient to reach up to their rims.

Late Hot-beds from the middle or end of april to the end of may, for latter crops of cucumbers and melons, for raising many annual flowers, and for forwarding the less tender sorts of seeds, plants and cuttings, may be covered with bell-glasses, oiled paper, or mats over hoops; of these the oiled paper frames are the best, and answer all the purposes of glass-lights late in the season.

Farther directions respecting Hot-beds and their management may be found in the culture of Cucumbers and Melons, under the article CUCUMIS.

HOTTENTOT CHERRY. See *Cassine Maurocenia*, and *Celastrus lucidus*.]

HOTTONIA. (So named by Boerhaave, from Peter Hotton, Professor of Botany at Leyden.)

Lin. gen. n. 203. Reich. 216. Schreb. 265. Boerb. Juss. 95.

Stratiotes. Vaill. mem. acad. 1719.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Palmæ*, β .—*Lyfimachia*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-parted: parts linear, from erect spreading.

COR. one-petalled, salver-shaped: tube the length of the calyx: border five-cleft, flat: clefts ovate-oblong, emarginate.

STAM. Filaments five, awl-shaped, short, upright, opposite to the clefts of the corolla, and placed on the tube.

Anthers oblong.

Herball. 764. p. 154.

Pist. Germ globular-acuminate. Style filiform, short. Stigma globular.
Per. Capsule globular, acuminate, one-celled, placed on the calyx.
SEEDS very many, globular. Receptacle globular, large.

ESSENTIAL CHARACTER.

Cor. salver-shaped. **Stam.** placed on the tube of the corolla. **Caps.** one-celled.

SPECIES.

1. *Hottonia palustris*. Common Water-Violet.
Lin. spec. 208. *syft.* 194. *Reich.* 1. 416. *hort. cliff.* 51. *fl. suec. n.* 174. *Huds. angl.* 85. *Wither.* arr. 207. *Curt. lond.* 1. 11. *Relb. cant. n.* 161. *Hall. herb. n.* 632. *Scop. carn. n.* 213. *Neck. gallob.* 108. *Fl. dan. t.* 487. *Pollich. pal. n.* 198. *Krock. fles. n.* 300. *Villars dauph.* 2. 482.
Hottonia. *Boerb. ind.* 207. *Raii syn.* 285.
Millefolium aquaticum, seu *Viola aquatica*, caule nudo. *Baub. pin.* 141.—&c. *M. aquat. equisetifolium*, caule nudo, *ejusd.*
M. aquat. dictum Viola aquat. *Baub. hist.* *Raii hist.* 1101.
M. aquat. floridum, f. *Viola aquat.* *Park. theat.* 1256. 4.
Myriophyllum alterum. *Matth.* 1168. *Camer. epit.* 897.—*equisetif. fluviatile.* *Lob. obs.* 460. 2.
Viola aquatilis. *Dod. purg.* 230. *pempt.* 584. 2.—*palustris.* *Ger.* 678. 1. *emac.* 826. 1, 2.
Peduncles in naked whorls of several flowers, leaves in whorls, pinnate.
2. *Hottonia indica*. Indian Water Violet.
Lin. spec. 208. *syft.* 195. *Burm. zeyl.* 121. t. 55. f. 1.
Gratiola malabarica fol. stellatim dentatis. *Petro. gaz.* t. 54. f. 11. (bad).
Erica africana equiseti folio. *Seba mus.* 2. t. 37. f. 5.
Tiunda Tiera. *Rheed. mal.* 12. 71. t. 36.
Peduncles axillary, one-flowered, leaves in whorls, trifid or thrice trifid.
3. *Hottonia sessiliflora*. Sessile-flowered Water Violet.
Vahl symb. 2. 36.
Flowers in leafy whorls, sessile, leaves in whorls, bipinnate and trifid.
4. *Hottonia litoralis*. Sea Water Violet.
Lour. cochinch. 105.
Leaves ovate-oblong, opposite, quite entire; flowers solitary.

DESCRIPTIONS, &c.

1. The root consists of numerous white capillary fibres, which strike deep into the mud. The stem is a scape, a foot high, simple, upright, towards the top roughish with little glands, at bottom furnished with numerous leaves, whence proceed several stalks, which run out to a considerable length through the water, and throw out numerous white fibres. Leaves numerous, generally under water, growing in tufts on the tops of the young stems, bending downwards, the pinnae linear and flat. Flowers pale purple or white, with a yellow eye, in several whorls one above another, forming all together a handsome spike. Peduncles as far as ten in number, with a bracte at bottom, and when the flowers are gone off bending downwards^a.

This singular plant has the leaves under water, and the upper part of the flowering stem only above; the flowers are beautiful; the leaves afford a refuge, and perhaps nourishment to the fresh-water Periwinkle, and other small shell-fish. It abounds in ditches and marshes, stagnant waters, and flow-running streams, flowering in may and june, and continuing a long time in flower. The old writers call it *Millefolium* from the abundance of its leaves; and *Viola*, which was a favourite name for the Stock-Gilliflower and many other plants with handsome flowers, besides the Violet. In English, besides Water Violet, it has the names of Water Milfoil, or Yarrow, and Water Gilliflower; in Dodoen's herbal by Lyte, Water Gillofer. In German, *Wasserviole*. In Dutch, *Waterviolier*. In Danish,

^a Curtis.

Vandrollike. In Swedish, *Vattenrollika*. In French, *Plumeau*, *Plume d'eau*, *Plumette*, *Violette aquatique*, *Giroflée d'eau*, *Millefeuille d'eau*, *Hottone*. In Italian, *Mirisillo aquatico*.

There is a variety with smaller leaves^b. Some flowers have six stamens; and in that case the calyx and corolla are divided into six segments^c.

2. Stem a finger's length, quite simple. Leaves in whorls; frequently eight together, trifid or thrice trifid. Peduncles lateral, from the axils of the leaves, solitary, longer than the leaves. The genus is doubtful^d.

Burmah, who found it in the island of Ceylon, says that the stalk is slender, jointed, simple; that the leaves come out at each joint in a stellated form, five, six or more together, slender; short, pinnately divided; that a slender peduncle springs from the same point, longer than the leaves, bearing a single flower on the top, which has a small five-cleft calyx, and a five-cleft petal, (which in the Hortus Malabaricus is described and figured as four-cleft) five stamens, and one pistil with a head; and that the fruit is a roundish one-celled capsule, containing many seeds.

3. Stem simple, sometimes with a branchlet at top. The leaves under water resemble those of the first species, are in whorls and bipinnate, the segments linear, and quite entire; the upper ones are like those of the second species, three-parted; the segments linear-lanceolate, gash-toothed; the floral-leaves in fours, trifid, quite entire, marked with two lines. Spike terminating, three inches long. Flowers sessile, four to each whorl. Calyx the length of the leaves, cylindrical, with awl-shaped segments. Style longer than the calyx. It differs from the preceding in having the flowers in whorls; from the first in the flowers being sessile, and the whorls leafy. Found in the East-Indies by Burmann^e.

4. Stem commonly quite simple, eight inches high, upright. Leaves smooth. Flowers purple, axillary, peduncled. Calyx tubular, slightly five-cleft, the clefts upright. Anthers twisted. Stigma turbinate-rounded. Capsule longish, two-valved, with many, very small, round, black seeds. The flower resembles that of the second species, but the leaves are very different. Native of Cochinchina^f.]

PROPAGATION AND CULTURE.

The common *Hottonia* may be propagated in deep standing waters, by dropping the seeds as soon as they are ripe, into the water, where they are designed to grow; and the spring following they will appear, and if they are not disturbed will soon increase abundantly. [The other sorts are not known in Europe, in a living state.

HOVENIA. (So named by Thunberg, in honour of M. ten Hoven, one of the Privy Counsellors of Holland, one of his patrons, and a great cultivator of exotic plants.)

Lin. gen. Schreb. n. 375. *Thunb. nov. gen.* 7. *Fl. jap.* 7. *Juss.* 381.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Dumose.—*Rhamni*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, hairy at the base within, permanent, five-parted: *parts* ovate, reflex, deciduous.

COR. Petals five, obovate, very obtuse, patulous, rolled up, involving the stamens, inserted into the calyx between the segments, and of the same length with them.

STAM. Filaments five, inserted into the base of the calyx, and a little shorter. Anthers roundish, hid within the petals.

Pist. Germ superior. Style upright, much shorter than the calyx. Stigmas three, from patulous reflex, blunt.

PER. Capsule ovate-globular, three-furrowed, three-celled, three-valved.

SEEDS solitary, lens-shaped, very smooth.

OBS. Sometimes, but seldom, the calyx is four-parted, and there are only four stamens.

^b Ger. emac.^c Withering.^d Linn. spec.^e Vahl.^f Loureiro.

ESSENTIAL CHARACTER.

Pet. five, convoluted. *Stigma* trifid. *Caps.* three-celled, three-valved.

SPECIES.

1. *Hovenia dulcis.*

Thunb. jap. 101. *Hornst. diff.* 1. p. 7, 8, 9. *Lin. syst.* 240. *Kämpf. amœn.* 5. 808. t. 809.

DESCRIPTION, &c.

Root perennial. Stem arboreous, thick, a fathom and half in height. Branches round, smooth. Leaves alternate, petioled, subcordate, ovate, acuminate, serrate, hanging down, nerved, smooth, a hand in length. Petiole semicylindric, reflex, smooth, an inch long. Flowers axillary and terminating, paniced. Panicle dichotomous, compressed. Peduncles subcylicindric, dichotomous, thickening after flowering-time, with a sweet red pulp, which is eaten by the Japanese, and has a taste somewhat like a pear. Pedicels divaricating, bent to and fro, smooth, a line in length. The flowers readily fall off.

Native of Japan, near Nagasaki; flowering from June to August, and ripening the fruit in November and December.

HOUSTON'S-TONGUE. See *Cynoglossum*.

HOUSELEEK. See *Sempervivum*.

HOUSTONIA. (So named by Gronovius from William Houston, M.D. who travelled into America, and died there in July 1733. He sent over a great number of specimens and seeds of new plants. Sir Joseph Banks published *Reliquiæ Houstonianæ* from his manuscripts.)

Lin. gen. n. 124. *Reich.* 131. *Schreb.* 161. *Gartn. t.* 49. *Juss.* 197.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Stellatæ*.—*Rubiaceæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* very small, four-toothed, upright, permanent.

COR. one-petalled, funnel-shaped: tube cylindric, long; border four-parted, spreading, parts roundish.

STAM. *Filaments* four, in the neck of the corolla, very small. *Anthers* simple.

PIST. *Germ* superior, roundish, compressed. *Style* simple, shorter than the stamens. *Stigma* bifid, acute.

PER. *Capsule* roundish, twin, gaping transversely at top, two-celled, two-valved: valves opposite to the partition.

SEEDS few (three or four) small, ovate, adhering to the partition.

OBS. The germ of *H. purpurea* is certainly inferior. Juss.

ESSENTIAL CHARACTER.

Cor. one-petalled, funnel-form. Caps. superior, two-celled, two-seeded. (Seeds three or four in each cell. G.)

SPECIES.

1. *Houstonia cærulea.* Blue-flowered Houstonia.

Lin. spec. 152. *syst.* 149. *Reich.* 1. 298. *hort. cliff.* 35. *Gron. virg.* 15. *Pluk. alm.* 324. *mant.* 164. (Rubia). *Mor. hist.* 3. 614. f. 15. t. 4. f. 1. (Paronychiæ facie).

β. *Chamæjasme inodora*, alfine facie, dispermos tetrapetaloides, quadrato caule, virginiana. *Pluk. alm.* 97. *mant.* 45. t. 97. f. 9. *Raii suppl.* 502. 69. Root-leaves ovate, stem compound, first peduncles two-flowered.

2. *Houstonia purpurea.* Purple-flowered Houstonia.

Lin. spec. 152. *syst.* 149. *Reich.* 1. 299. *Gron. virg.* 15. *Pluk. mant.* 164. *Raii suppl.* 262. (Rubia mariana).

Leaves ovate-lanceolate, corymbs terminating, flowers superior.

DESCRIPTIONS, &c.

1. This is a vernal plant^a, with terminating flowers^b. From a slender root it produces small, oblong, pointed leaves, spreading on the ground in a ring; among these, slender smooth stalks arise, at the height of two inches forming a joint, and furnished with two or three small leaves; here they divide into two, or sometimes three slender branches or peduncles an inch or two in length, and at the end of each a single blue flower.

^a Thunberg.

^b Linn. syst.

^c Jussieu.

Native of Virginia, whence it was sent by John Banister^c.

It was introduced by Mr. Archibald Menzies in 1785, and flowers here most part of the summer^d.

Jussieu doubts whether the germ be really superior in this, since it is certainly inferior in the other species.

Linneus had supposed the seeds to be solitary. Gærtner imagines, that the globular receptacle falling with the seeds, had made Linneus mistake it for a single seed.

β. The little stems are extremely slender, half a hand in height, branched, with a pair of narrow, short leaves at each joint; the lower ones shaped like those of a very small *Alfine*. Peduncles axillary, very slender, oblong, having each one flower at the top, large in proportion to the size of the plant, and blue. Native of Maryland, whence dried specimens of it were brought by Vernon and Krieg.

2. This has leaves in pairs, resembling those of large *Alfine* or Chickweed. The flower is of a red purple. Native of Maryland; where it is also found with a narrower leaf^e.

Gærtner has a species (from Sir Joseph Banks's herbarium) which he calls *H. longifolia*: the capsule of which is superior, bipartite, at the base surrounded by the four-parted calyx, compressed at the top, marked with two grooves; receptacle fungose, subglobular, pedicelled, fixed to the middle of the partition of each cell, when ripe falling along with the seeds; of which there are three or four in each cell, compressed a little, having a ridge along the back, and a little umbilical scar in the middle of the belly; they are of a very dark brown colour^f.

HOUTTUYNIA. (So named by Thunberg, in honour of Mart. Houttuyn, M.D. of Holland; author of *Natuurlyke historie, in fourteen volumes octavo, Amsterdam 1773 to 1783.*)

Lin. gen. Schreb. n. 1389. *Thunb. jap.* 12. *Juss.* 25. *Giseke ord. nat.* 127.

Class. 21. 1. Monoecia Monandria. (Heptandria, Gif.) Polyandria Polygynia, *Thunb.*

Nat. order of *Piperitæ*.—*Aroideæ*, Juss. Perhaps nearer allied to the *Naiades*.

GENERIC CHARACTER.

* Male Flowers.

CAL. *Spathe*? four-leaved: leaflets ovate, concave, obtuse, coloured. *Spadix* oblong, the length of the spathe, covered with fructifications.

COR. none.

STAM. *Filaments* very many, intermixed with the germs (about seven round each germ) very short. *Anthers* twin, ovate.

* Females.

CAL. *Spathe* and *Spadix* common with the Males.

COR. none.

PIST. *Germs* very many, intermixed with the stamens. (Germ three-cornered. *Style* none. *Stigmas* three, oblong, reflex. *Lour.*)

PER. *Capsule*? three-cornered, (three-celled, three-valved, opening at the top. *Lour.*)

SEEDS (many, ovate, small. *Lour.*)

ESSENTIAL CHARACTER.

Cal. four-leaved. Cor. none. Stam. mixed with the pistils (seven about each germ. *Gis.*)

SPECIES.

1. *Houttuynia cordata.*

Lin. syst. 519. *Thunb. jap.* 234. t. 26. *act. stockb.* 1783. p. 149. t. 5.

Polypara cochinchinensis. *Lour. cochinch.* 61.

DESCRIPTION, &c.

This plant has the habit of *Polygonum*, with stipules as that has^g. Root annual, fibrous. Stem simple, herbaceous, grooved, flexuose, upright, a hand, a span, or a foot in height, smooth in all its parts. Leaves alternate, petioled, cordate, cuspidate, entire, paler underneath. Petioles striated, stipuled at the base, shorter than the leaf. Stipules in pairs, fastened to the petiole at the base, oblong, blunt, membranaceous at

^g Mor. hist.

^h Hort. kew.

ⁱ Ray hist. suppl.

^j De fruct. & semin. vol. 1. p. 226.

^k Giseke ord. nat. 128.

the tip, shorter by half than the petiole. Flowers from the sheath of the petiole solitary, peduncled. Peduncle the length of the petiole. It is difficult to determine the number of stamens in this genus, because there is no calyx, corolla or scales to separate the germs. It ought however to be referred to the class Polyandria, the stamens being scattered over an elongated receptacle, among several germs.

Discovered by Thunberg in Japan between Miaco and Jedo, very common in the ditches, and near the towns; flowering in may and june^h.

Loureiro also found it, if his Polypara be the same plant, in the gardens of Cochinchina, where it is eaten in salads, and is esteemed attenuant, resolvent and emmenagogue. The leaves are five-nerved in his plant, which they are not in the Houttuynia of Thunberg; but they agree so nearly in habit, that we may presume they are the same species.

Loureiro describes it as annual, with a creeping root; stem six inches high, upright, grooved; leaves cordate, acuminate, five-nerved, large, quite entire, smooth, alternate, strong-smelling, on long petioles; flowers lateral, solitary, on long upright peduncles; the common corolla (spathe) very white and spreading. The stamens are not confusedly mixed with the pistils, but fixed by threes to each of the three sides of the triangular germ: the germs are also distinct, with three sessile stigmas. Loureiro calls the four leaves at the base of the common receptacle the petals; and he names the plant Polypara, because the common corolla (or spathe) produces many florets. According to him, each flower has three filiform upright filaments, placed on a partial receptacle, and three stigmas: he therefore refers this genus to the order trigynia of the class triandria.

HUDSONIA. (So named by Linneus, in honour of William Hudson, apothecary of London, F.R.S. and author of *Flora Anglica* 1762 and 1778. 8vo.)

Lin. gen. Reich. n. 657. Schreb. 822. Juss. 162. Berg. act. holm. 1778.

Class. II. I. Dodecandria Monogynia.

Nat. order of Bicornes?—Ericæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* three-leaved, tubular, cylindric, with a patulous mouth: *leaflets* lanceolate-linear, blunt.

COR. none.

STAM. *Filaments* fifteen, capillary, shorter than the calyx. *Anthems* roundish.

PIST. *Germ* superior, ovate. *Style* filiform, the length of the calyx. *Stigma* blunt.

PER. *Capsule* cylindric, shorter by half than the calyx, one-celled, three-valved.

SEEDS three, rounded on one side, angular on the other.

ESSENTIAL CHARACTER.

Cal. five-leaved (three-leaved above, three-parted, *Juss.*) tubular. *Cor.* none. (Petals five, very small, *Berg.*) *Stam.* fifteen. *Caps.* one-celled, three-valved, three-seeded.

SPECIES.

1. *Hudsonia ericoides.*

Lin. syst. 445. Reich. 2. 422. mant. 74. Berg. in act. holm. 1778. t. 2. Pluk. mant. 88. (Ericæ-formis suffrutex, &c.)

DESCRIPTION, &c.

This is a shrub with the appearance and habit of Erica or Heath. Branchlets filiform, scattered, imbricate. Leaves subulate-acrosc, hirsute; when tender still more hirsute and hoary, so that those on the extreme branchlets seem as if they had leafy gems scattered over them. Peduncles (from the leafy gems) solitary, filiform, longer than the leaves. Calyx erect, pubescent. Native of Virginiaⁱ.

HUGONIA. (So named by Linneus, in memory of Augustus Johannes de Hugo, who travelled in Swizerland with Haller in 1732, and assisted him with his herbarium.)

Lin. gen. n. 831. Reich. 896. Schreb. 1117. Cavanill. diff. 3. 177. Gært. t. 58. Juss. 275.

Class. 16. 4. Monadelphia Decandria.

Nat. order of Columniferae.—Malvaceæ, Juss.

^h Thunb. jap.

ⁱ Linn. mant.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved: *segments* ovate, acute, concave, coriaceous, permanent; the two outer ones larger; (five-leaved, G.)

COR. *Petals* five roundish, large, emarginate, spreading, narrowed at the base, fixed at the base by slender claws to the little pitcher of stamens.

STAM. *Filaments* ten, awl-shaped, equal, shorter than the corolla, connected at bottom into a little pitcher. *Anthems* roundish, furrowed, incumbent.

PIST. *Germ* roundish. *Styles* five filiform, longer than the stamens. *Stigmas* capitate, orbicular, flat.

PER. *Drupe* globular, one-celled: (A berried drupe, G.)

SEED. *Nut* globular, deeply striated, ten-celled. *Kernels* oblong, compressed, bowed at the back.

OBS. *The two outer segments of the perianth are wholly tomentose on the outside; the middle one is also tomentose, except that part where it is covered by one of the outer ones, and there it is smooth and shining, as are the two inner ones, which are tomentose only at the tip. The filaments were alternately shorter in the flower, which I examined. The alternate kernels seem frequently to be abortive; hence perhaps Cavanilles makes the fruit to be five-celled. In the drupe which I opened there were more than five kernels. Sch.*

ESSENTIAL CHARACTER.

Five-styled. *Cor.* five-petalled. *Drupe* with a striated nut.

SPECIES.

1. *Hugonia Myrtax.*

Lin. spec. 944. Reich. 3. 307. fl. zeyl. n. 249. Gært. fruct. 1. 281.

Myrtax frutex baccifer malabaricus, fructu calyculato rotundo monopyreno. Raii hist. 1570.—&c. Ægoceros arbor zeylanica, lauri fructu, cortice costum olente. Raii dendr. 45.

Modira-canni. Rheed. mal. 2. 29. t. 19.

Spines opposite revolute.

DESCRIPTION, &c.

This is a tree with an irregular bark. Branchlets short, alternate, spreading, leafy at the end. Leaves oval, quite entire, smooth, petioled, clustered. Flowers several, from the ends of the branches, in clusters, white. Tendrils or spines two, on each of the branchlets, short, rigid, parallel to the branches, below the leaves. Perianth five-leaved. Anthems twin. Germ ovate, within the little pitcher formed by the lower part of the filaments^k.

The fruit is a berried, spherical, succulent drupe; the skin is very thin, papery, tough, white, with a very polished shining surface; the pulp is succulent, but disappears in time; the shell is bony, spherical, deeply striated, and ten-celled. There is a single oblong seed in each cell, drawn to a point at both ends, arched on the back, thickish, flat on the sides, wedge-form, compressed, pale^l.

Native of the East Indies.

HUMBLE PLANT. See *Mimosa*.

HUMMATU. See *Datura Metel*.

HUMULUS. (*Dimin.* From *Humus*, moist earth or ground. *Hupa* and *Humela* in barbarous Latin. *Lupulus*, *dimin.* from *Lupus*).

Lin. gen. n. 1116. Reich. 1221. Schreb. 1523.

Juss. 404. Lupulus. Tournes. 309. Gært. 75.

Class. 22. 5. Dioecia Pentandria.

Nat. order of Scabridæ. Urticæ, Juss.

GENERIC CHARACTER.

* *Male.*

CAL. *Perianth* five-leaved: leaflets oblong, concave, blunt.

COR. none.

STAM. *Filaments* five, capillary, very short. *Anthems* oblong.

* *Female.*

CAL. *Involucre* universal four-parted, sharp: *partial* four-leaved, ovate, eight-flowered: to each flower a *Perianth* one-leaved, ovate, very large, outwardly flat on one side, converging at the base.

^k Linn. zeyl.

^l Gærtner.

Cor. none.

Pist. Germ very small. Styles two, subulate, patulous. Stigmas sharp.

Per. none. Calyx inclosing the seed at the base.

Seed roundish, covered with a coat.

ESSENTIAL CHARACTER.

Male. Cal. five-leaved. Cor. none.

Fem. Cal. one-leaved, spreading obliquely, entire. Cor. none. Styles two. Seed one, within a leafed calyx.

SPECIES.

1. *Humulus Lupulus*. Hops.

Lin. spec. 1457. Reich. 4. 252. hort. cliff. 458. fl. succ. n. 908. mat. med. 214. Hudf. angl. 433. Wither. arr. 1117. ed. 3. v. 2. p. 277. Lightf. scot. 615. Relb. cant. n. 725. Neck. gallob. 399. Pollich pal. n. 927. Villars dauph. 2. 569. Allion. pedem. n. 1989. Mill. illustr. ic.]

Lupulus Humulus. Mill. dict.

[*L. communis*. Gært. fruct. 1. 358.

Lupulus. Hall. herb. n. 1618. Blackw. t. 536. a, b. Brunfels. Matth. 1213. Dod. pempt. 409. 1. Lob. obs. 347. 2. ic. 1. 629. 1. Camer. epit. 933, 934. Clus. hist. 1. 126. 2.

L. mas & foemina. Baub. pin. 298. 1, 2. Baub. hist. 2. 151. Raii hist. 156. syn. 137.

L. sativus & sylvestris. Trag. 812. Lonic. 1. 208. 3. Park. theat. 176. n. 1, 2.

L. salictarius. Plin. hist. nat. l. 21. n. 15. Fuchf. 164. Ger. 737. emac. 885. Park. theat. 177.

Cannabis Lupulus. Scop. carn. n. 1219.

DESCRIPTION, &c.

Root perennial. Stems weak and twining, not climbing by tendrils, but ascending a prop, trees or shrubs in a spiral, always with the sun, that is from right to left, or from east to west by the south; this direction it has in common with *Tamus* or Black Bryony, *Lonicera* or Honeyfuckle, and several others; but more turn the contrary way, or from left to right, as *Phaseolus* or Kidney Beans, and several other leguminous plants, *Convolvulus*, &c. &c.^a These stems are angular, striated, and rugged with very minute prickles. Leaves opposite in pairs, (or sometimes in threes) the upper ones heart-shaped, the lower three-lobed, (or sometimes five-lobed) ferrate, dark green above, pale green beneath, on long petioles; which, as well as the leaves themselves, are rugged with minute prickles. Stipules two or four, cordate, bifid, at each joint. Flowers greenish yellow; the males on branched peduncles; the females on a distinct plant, peduncled, in pairs, in form of a cone or strobile^b, composed of ovate, membranaceous scales, tubular from being rolled in at the base, and two-flowered, each containing one (sometimes two) seed, of a brown bay colour, of a globular form a little flattened, surrounded with a sharp rim, and compressed at the tip. It is covered with three coats; the outer membranaceous and wrinkled, the middle crustaceous and thin, the inner membranaceous. The embryo is spiral and inverted^c.

Native of most parts of Europe, in hedges; also of Japan: flowering with us in June.

Hops in German are called *Hopfen*; in Dutch, *Hoppe*; in Danish and Swedish, *Humle*; in French, *le Houblon*; in Italian, *Lupulo*; in Spanish, *Hombrecillo*, *boblon*, *lupulo*, *lupio*, *vidarria*; in Portuguese, *Lupulo*, *lupara*, *hombrezillo*, *sinoura*, *seba*; in Russian and all the Slavonian dialects, *Chmel*; in the Tartarian, *Kumulak*, *Kumula*, *Umula*; in Persian, *Hymel*.

The young shoots are eaten early in the spring as Asparagus, and are sold under the name of Hop-tops; they are said to be diuretic, and to be good against the scurvy, taken in an infusion. The herb will dye wool yellow. From the stalks a strong cloth is made in Sweden: for this purpose they must be gathered in autumn, soaked in water all winter; and in March, after being dried in a stove, they are dressed like flax^d. They require a longer time to rot than flax, and if not completely macerated, the woody part will not separate, nor the cloth prove white or fine.

^a Ray hist.

^b Pollich, Haller, Lightfoot.

^c Gartner.

^d Withering.

The Society for encouragement of Arts, Manufactures and Commerce at London offered premiums, in the year 1760, for cloth made from Hop-stalks, or binds. The year following Mr. Cooksey produced some specimens of cloth, and was of opinion that it would answer very well the purpose of fine sacking, and coarse bagging for hops. He had kept the material too long under water; and found that at the end of six weeks or two months, the binds afforded filaments sufficiently fine and strong for any purpose. In 1791, Mr. John Lockett of Donnington near Newbury in Berkshire had the premium adjudged to him for cloth made from these stalks or Hop-Vines, as they are here called. They were cut in lengths of about two or three feet; put into a furnace, in which was some lie that linen had been boiled in for bleaching; and then boiled, till the rind separated from the stalk easily. When cool, they stript so freely, that children might do it; and the yield was great in proportion to the quantity of stalks. The same method was then followed as in working hemp or flax; but it is much more stubborn than either, and therefore not so well adapted to making fine cloth: the fibres also are so united with a very adherent matter, that they do not easily separate; but for sacks, cordage, &c. it may be of great service.

Some of it was hackled while it was wet, soon after it was taken off, but it did not separate the fibres. Carding seems to work it best, and to make it like cotton. Of the piece of cloth sent the warp was hackled, and the wool carded^e.

A decoction of the roots of Hops, from one to two ounces; or an extract from them, to the quantity of twenty or thirty grains, is said to be sudorific, and to answer the purposes of Sarsaparilla^f. Both these and the strobiles have a balsamic principle, and are thought to be serviceable in removing obstructions, correcting the viscosity of the lymph, opening the pores of the skin, cleansing the kidneys, &c. But the principal use of the latter in Britain and other northern countries, is in brewing beer, to prevent it from turning sour. Haller, from Isidorus, says that the first experiment for this purpose was made in Italy.

The use of Hops for preserving beer, and the culture of the plant were introduced into England from Flanders. The year assigned is 1524, the 15th of Henry VIII.^h Fitzherbert in 1534 makes no mention of them; but Tuffer in 1562 gives many directions for their cultureⁱ, which was new in his time; for although they probably began to be used after the expedition of King Henry VIII. against Tournay, yet like most novelties they were at first much opposed, and were doubtless for some time chiefly imported; for so late as the year 1695, five hundred and ten hundred weight was imported from Flanders and Holland^k.

The first treatise written expressly on the culture of Hops in English was by Reynolde Scot, printed in 1574, and a second time in 1576; it is entitled "A perfitte platforme of a Hoppe Garden." Lond. qu. black letter: pages 63.

He complains, that "the Flemmings envie our practise herin, who altogether tende their owne profite, seeking to impownde us in the ignorance of our commodities, to cramme us with the wares and fruites of their Countrie, and to doe anye thing that myght put impediment to this purpose, dazeling us with the discommendation of our soyle, obscuring and falsifying the order of this mysterie, sending us into Flaunders as farre as Poppering, for that which we may finde at home in our owne backside."

Gervase Markham, in his farewell to Husbandry 1631, has a chapter on barren grounds, and on making them fruitful to bear Hops. l. 20. p. 109. ed. 8. 1664.

It appears from our old herbalists Gerarde and Parkinson, that Ale and Beer were different liquors; the first being malt-liquor without, and the second with Hops.—"The Ale," says the latter of these authors (1640) "which our forefathers were accustomed only

^e Transact. vol. 3. for 1785.

^f Ibid. vol. 9. for 1791.

^g Withering.

^h Houghton's collections, 2. 457.

ⁱ See in January, March, April, May, June, and August.

^k Hought. 2. 458.

“ to drink, being a kind of thicker drink than beere,
 “ is now almost quite left off to be made, the use of
 “ Hoppes to be put therein, altering the quality
 “ thereof, to be much more healthfull, or rather phy-
 “ sicall, to preserve the body from the repletion of
 “ grosse humors, which the Ale engendred.”

Walter Blith, in his *English Improver Improved*, 1649; third edition, 1653, p. 240, has a chapter upon improvement by plantations of Hops, &c. He observes that “ Hops were then grown to be a nationall commodity: but that it was not many years since the famous City of London petitioned the Parliament of England against two anuſancies—and these were, Newcastle coals, in regard of their stench, &c. and Hops in regard they would spoyl the tast of drink, and endanger the people: and had the Parliament been no wiser than they, we had been in a measure pined, and in a greater measure starved, which is just answerable to the principles of those men who cry down all devices or ingenious discoveries, as projects, and thereby stifle and choak improvements.”

He has eight pages in quarto upon the land best for Hops, and the best sets for planting; the manner of planting and cultivating them; and the profit accruing from them.

Samuel Hartlib, Esq. in the *Compleat Husbandman*, 1659, says that in Queen Elizabeth's time we had Hopps from the Low Countries; and that “ the Frenchman who writes the *Treasure Politick* saith, that it's one of the great deficiencies of England, that Hopps will not grow, whereas now it is known, that they are the best in the world.”

Robert Sharrock, fellow of New College, Oxford, in his history of the Propagation and Improvement of Vegetables, Oxf. 1660. 8°—2d edition 1672, p. 86, &c. gives instructions for the planting and management of Hops, from Blith and the Farnham practice.

Mr. Worlidge, in his *Systema Agriculturæ*, or *Myſtery of Husbandry* discovered, 1668 folio, is very copious in his directions for the tillage of Hops. He says, we had not then enough planted to serve the kingdom, but yearly made use of Flemish Hops, nothing near so good as our own¹.

Mortimer, in his *whole Art of Husbandry*, 1706, 8°, gives ample directions for the planting, culture, picking, drying, and bagging of Hops^m. The best instructions relative to brewing are also to be found in this workⁿ.

The authors above mentioned bring down the culture of Hops to the time of Mr. Miller, who has confined himself chiefly to the method which is followed in the county of Kent, where they were first adopted, with most of our improvements in husbandry, from Flanders. There are other treatises on the subject; but I have mentioned those only which I have had an opportunity of consulting.

Blith's directions are chiefly abridged from Scot's diffusive treatise. Sharrock has followed Blith, with additions from the practice of the Farnham Hop-Masters. Markham is very brief on the subject. Worlidge is sufficiently copious, and appears to have taken much from Scot the original fountain. Mortimer has transcribed from Worlidge almost literally, the greater part of what he has written on the subject.

Ground-Ivy, called also Ale-hoof or Tun-hoof (*Glechoma hederacea*) was generally used for preserving Beer, before the introduction of Hops. And since they have been introduced, many plants are said to serve as succedaneums when Hops are dear: as the roots of Ginger and Gentian; the seeds of *Coloquintida*; and the herbs of Horehound, Wormwood, Broom, *Carduus benedictus*, *Centaurea Calcitrapa* or Star-Thistle, Marsh-Trefoil or Buckbean (*Menyanthes trifoliata*), &c. The last particularly is much recommended as a much more wholesome bitter than Hops, in the proportion of two ounces, where a pound of the latter is used^o. But all public brewers are en-

joined under a severe penalty to use no other bitter than Hops for their malt liquors.

It is a general opinion among the Hop-planters, that the plants which bear the male flowers, or the Wild Hops as they call them, are of no service in securing or increasing the crop; they are therefore commonly cast out. It would be well however, if some accurate experiments were made on this subject.]

PROPAGATION AND CULTURE.

There being the greatest plantation of Hops in Kent that are in any county in England, it is very probable; that their method of planting and ordering them should be the best.

As for the choice of their Hop-grounds, they esteem the richest and strongest grounds as the most proper: they chuse a warm dry soil, that has a good depth of hazel mould; and if it be rocky within two or three feet of the surface, the Hops will prosper well: but they will by no means thrive on a stiff clay, or spongy wet land.

If it may be, chuse a piece of meadow or lay ground to plant Hops on, such as has not been tilled or sown with other crops for many years, or an old decayed orchard; for land that is worn out by long bearing of Corn, will require abundance of dung to bring it into any tolerable condition to bear a crop of Hops. The Kentish planters accounting new land best for Hops, they plant their Hop-gardens with Apple-trees at a large distance, and with Cherry-trees between; and when the land has done its best for Hops, which they reckon it will in about ten years, the trees may begin to bear. The Cherry-trees last about thirty years, and by the time the Apple-trees are large, they cut down the Cherry-trees.

The Essex planters account a moory land the properest for Hops, though there are several other sorts of soil that are esteemed very good.

Some account that land which has a rosselly top, and a brick earth bottom, the best; a true rossel or light sand, is what they generally plant in, whether it be white or black.

Moory land is of different sorts, some being strong and heavy, so as to crack in summer; and some so light, that in dry seasons it will blow away with the wind; and some are of a middle consistence, being composed of both.

These moors for goodness and value, are according to the nature and goodness of the soil that is underneath them; which being flung up upon the surface, will make a very good mixture, it being best to fling the under soil downward for Hops, because they naturally root downwards, sometimes four or five yards deep, and therefore the deepest and richest soil is best for them.

Few are acquainted with the value of moors, because they do not search into the bottom of them, by reason of the expensiveness of doing it, and the difficulty of carrying off the water.

If the land be moist, it ought to be laid up in high ridges, and to be well drained, and the drains kept clear and open, especially in winter, that the water do not rot or too much chill the roots.

If the land be sour or cold, it will be very much helped by burning it; and if the haulm and strings of the Hops be burnt every year, and some of the paring or sides of the garden or other earth be laid on them as they burn, and then more haulm be laid over that, and so continued layer upon layer, it will make an excellent compost to make the hills with.

As to the situation of a Hop-ground, one that inclines to the south or west is the most eligible; but if it be exposed to the north-east or south-west winds, there should be a shelter of some trees at a distance; because the north-east winds are apt to nip the tender shoots in the spring, and the south-west frequently break and blow the poles at the latter end of the summer, and very much endanger the Hops.

Hops require to be planted in an open situation, that the air may freely pass round and between them to dry up and dissipate the moisture, whereby they will not be so subject to fire blasts, which often destroy the mid-

¹ P. 145. ed. 4. 1687. ^m P. 132. ed. 2. 1708. ⁿ P. 565.

^o Mortimer 145. Neck. gallob. 399.

dles of large plantations, while the outfides remain unhurt.

As for the preparation of the ground for planting, it should, the winter before, be ploughed and harrowed even; and then lay upon it in heaps a good quantity of fresh rich earth, or well rotted dung and earth mixed together, sufficient to put half a bushel in every hole to plant the Hops in, unless the natural ground be very fresh and good.

Then lay a line across it from the hedge, in which knots have been tied, at the distance you design your Hop-hills to be at, about eight or nine feet distance the whole length of the ground, and place a sharp pointed stick at every knot; then lay aside the line, and with two forked sticks of about eight or nine feet long, you may from the first row set out the whole ground, by applying the two forks or two of the sticks which were first set up, and placing another row at the ends, where the forked sticks meet triangularwise; then you should dig a hole at every stick about a foot and a half wide, and fill it full of the good earth you brought in.

If you plough the ground with horses between the hills, it will be best to plant them in squares chequerwise; but the quincunx form is the most beautiful, and it will also be better for the Hop; but if the ground is intended to be cultivated by the breast-plough, it will be best to plant them in squares; but which way soever you make use of, a stake should be stuck down at all the places where the hills are to be made.

Persons ought to be very curious in the choice of the plants and sets, as to the kind of the Hop; for if the Hop-garden be planted with a mixture of two or three sorts of Hops that ripen at different times, it will cause a great deal of trouble, and be a great detriment to the owner.

The two best sorts are the white and the gray bind; the latter is a large square Hop, more hardy, and is the more plentiful bearer, but ripens later than the former.

There is also another sort of the white bind, which ripens in a week or ten days before the common; but this is tenderer, and a less plentiful bearer, but it has this advantage, it come first to market.

But if three grounds, or three distant parts of one ground, be planted with these three sorts, there will be this conveniency, that they may be picked successively as they become ripe.

The sets ought to be procured out of grounds that are entirely of the same sorts you would have, they should be five or six inches long, with three or more joints or buds on them, all the old bind and hollow part of the set being cut off.

If there be a sort of Hop you value, and would increase plants and sets from, the superfluous binds may be laid down when the Hops are tied, cutting off the tops, and burying them in the hill; or when the Hops are dressed, all the cuttings may be saved, and laid in rows in a bed of good earth; for almost every part will grow, and become a good set the next spring.

Some have tried to raise a Hop-ground by sowing seeds, but that turns to no account, because that way is not only tedious, but the Hops so produced are commonly of different kinds, and many of them wild and barren.

As to the seasons of planting Hops, the Kentish planters best approve the months of october and march, both which succeed very well; but the common sets are not to be had in october, unless from some ground that is to be digged up and destroyed; and likewise there is some danger that the sets may be rotted, if the winter prove very wet; but the most usual time of procuring them is in march, when the Hops are cut and dressed.

As to the manner of planting the sets, you should put two or three good sets in every hole with a setting stick, at about four inches distance, placing them sloping; they must stand even with the surface of the ground; let them be pressed close with the hand, and covered with fine earth, and a stick should be placed on each side the hill to secure it.

The ground being thus planted, all that is to be done more that summer, is to keep the hills clear from weeds, and to horse-hoe the ground about the month of may, gathering up the stones, if more are turned up by ploughing, and to raise a small hill round about the plants; and in june you must twist the young binds or branches together in a bunch or knot, for if they are tied up to small poles the first year, in order to have a few Hops from them, it will not countervail the weakening the plants.

A mixture of compost or dung being prepared for your Hop-ground, the best time for laying it on, if the weather prove dry, is about Michaelmas, that the wheels of the dung-cart may not injure the Hops, nor furrow the ground: if this be not done then, you must be obliged to wait till the frost has hardened the ground, so that it will bear the dung-cart; and this is also the time to carry on your new poles, to recruit those that are decayed, and to be cast out every year.

If you have good store of dung, the best way will be to spread it in the alleys all over the ground, and to dig or plough it in the winter following. The quantity they will require, will be forty loads to an acre, reckoning about thirty bushels to the load.

If you have not dung enough to cover all the ground in one year, you may lay it on one part one year, and on the rest in another, or a third; for there is no occasion to dung the ground after this manner, oftener than once in two or three years.

Those who have but a small quantity of dung, usually content themselves with laying on about twenty loads upon an acre every year; this they lay only on the hills, either about november, or in the spring; which last some account the best time, when the Hops are dressed, to cover them after they are cut; but if it be done at this time, the compost or dung ought to be very well rotted and fine.

As to the dressing of the Hops, when the Hop-ground is dug or ploughed in january or february, the earth about the hills, and very near them, ought to be taken away with a spade, that you may come the more conveniently at the stock to cut it.

About the end of february, if the Hops were planted the spring before, or if the ground be weak, they ought to be dressed in dry weather; but else, if the ground be strong and in perfection, the middle of march will be a good time; and the latter end of march, if it be apt to produce over-rank binds, or the beginning of april, may be soon enough.

Then having with an iron picker cleared away all the earth out of the hills, so as to make the stock bare to the principal roots, with a sharp knife you must cut off all the shoots which grew up with the binds the last year; and also the young suckers, that none be left to run in the alley and weaken the hill. It will be proper to cut one part of the stock lower than the other, and also to cut that part low, that was left highest the preceding year. By pursuing this method, you may expect to have stronger buds, and also keep the hill in good order.

In dressing those Hops that have been planted the year before, you ought to cut off both the dead tops, and the young suckers which have sprung up from the sets, and also to cover the stocks with fine earth a finger's length in thickness.

About the middle of april the Hops are to be poled, when the shoots begin to sprout up; the poles must be set to the hills deep into the ground, with a square iron pitcher or crow, that they may the better endure the wind; three poles are sufficient for one hill. These should be placed as near the hills as may be, with their bending tops turned outwards from the hill, to prevent the binds from entangling; and a space between two poles ought to be left open to the south, to admit the sun beams.

The poles ought to be in length sixteen or twenty feet, more or less, according as the ground is in strength; and great care is to be taken not to over-pole a young or weak ground, for that will draw the stock too much, and weaken it. If a ground be over-poled, you are not to expect a good crop from it: for the branches which bear the Hops will grow very

very little, till the binds have over-reached the poles, which they cannot do when the poles are too long. Two small poles are sufficient for a ground that is young.

If you wait till the sprouts or young binds are grown to the length of a foot, you will be able to make a better judgment where to place the largest poles; but if you stay till they are so long as to fall into the alleys, it will be injurious to them, because they will entangle one with another, and will not clasp about the pole so readily.

Maple or Aspen poles are accounted the best for Hops, on which they are thought to prosper best, because of their warmth; or else, because the climbing of the Hop is furthered by means of the roughness of the bark. But for lastingness, Ashen or Willow poles are preferable; but Chestnut poles are the most durable of all.

If, after the Hops are grown up, you find any of them have been under-poled, taller poles may be placed near those that are too short, to receive the binds from them.

As to the tying of Hops, the buds that do not clasp of themselves to the nearest pole when they are grown to three or four feet high, must be guided to it by the hand, turning them to the sun, whose course they will always follow. They must be bound with withered Rushes, but not so close as to hinder them from climbing up the pole.

This you must continue to do till all the poles are furnished with binds, of which two or three are enough for a pole; and all the sprouts and binds that you have no occasion for, are to be plucked up; but if the ground be young, then none of these useless binds should be plucked up, but should be wrapt up together in the middle of the hill.

When the binds are grown beyond the reach of your hands, if they forsake the poles, you should make use of a stand ladder in tying them up.

Some advise, that if the binds be very strong, and overgrow the poles very much, you strike off their heads with a long switch, to increase their branching below.

Towards the latter end of may, when you have made an end of tying them, the ground must have the summer ploughing or digging, which is done by casting up with the spade some fine earth into every hill, and a month after it must be again repeated, and the hills made up to a convenient bigness.

It is not at all to be doubted, but that a thorough watering would be of very great advantage to Hops in a hot dry summer; but it is so much charge and trouble to do this, that unless you have a stream at hand to flow the ground, it is scarce practicable.

When the Hops blow, you should observe, if there be any wild barren hills among them, and mark them, by driving a sharpened stick into every such hill, that they may be digged up and replanted.

Hops as well as other vegetables, are liable to distempers and disasters, and among the rest to the *fen*. The Rev. Dr. Hales, in his excellent Treatise of Vegetable Statics, treating of Hops, gives us the following account of the state of Hops in Kent in the year 1725, that he received from Mr. Austen of Canterbury, which is as follows:

In mid april not half the shoots appeared above ground, so that the planters knew not how to pole them to the best advantage.

This defect of the shoot, upon opening the hills, was found to be owing to the multitude and variety of vermin that lay preying upon the roots; the increase of which, was imputed to the long and almost uninterrupted series of dry weather for three months before. Towards the end of april many of the Hop-vines were infested with flies.

About the 20th of may there was a very unequal appearance, some Vines being run seven feet, others not above three or four; some just tied to the poles, and some not visible; and this disproportionate inequality in their size, continued through the whole time of their growth.

The flies now appeared upon the leaves of the for-

wardest Vines, but not in such numbers here, as they did in most other places. About the middle of june the flies increased, yet not so as to endanger the crop; but in distant plantations they were exceedingly multiplied, so as to swarm towards the end of the month.

June the 27th some specks of *fen* appeared. From this time to the 9th of july was very dry weather. At this time, when it was said, that the Hops in most parts of the kingdom looked black and sickly, and seemed past recovery, ours held it out pretty well, in the opinion of the most skilful planters.

The great leaves were indeed discoloured, and a little withered, and the *fen* was somewhat increased. From the 9th of july to the 23d, the *fen* increased a great deal; but the flies and lice decreased, it raining much daily. In a week more the *fen*, which seemed to be almost at a stand, was considerably increased, especially in those grounds where it first appeared.

About the middle of august the Vines had done growing both in stem and branch, and the forwardest began to be in the Hop, the rest in bloom; the *fen* continued spreading where it was not before perceived, and not only the leaves, but many of the burs were also tainted with it.

About the 20th of august some of the Hops were infested with the *fen*, and whole branches corrupted by it. Half the plantations had pretty well escaped hitherto, and from this time the *fen* increased but little; but several days wind and rain the following week so distorted them, that many of them began to dwindle, and at last came to nothing; and of those that then remained in bloom, some never turned to Hops; and of the rest which did, many of them were so small, that they very little exceeded the bigness of a good thriving bur.

We did not begin to pick till the 8th of september, which is eighteen days later than we began the year before; the crop was little above two hundred on an acre round, and not good. The best Hops sold this year at Way-hill, for 16l. the hundred.

Dr. Hales gives us an account of the following experiment that he made on Hop-vines. He tells us, that in july he cut off two thriving Hop-vines near the ground, in a thick shady part of the garden, the pole still standing; he stripped the leaves off from one of these Vines, and set their stems in known quantities of water in little bottles; that with leaves imbibed in a twelve hours day four ounces, and that without leaves three-fourths of an ounce.

He took another Hop-pole with its Vines on it, and carried it out of the Hop-ground into a free and open exposure; these imbibed and perspired as much more as the former in the Hop-ground, which is, doubtless, the reason why the Hop-vines on the out-sides of plantations, where they are most exposed to the air, are short and poor, in comparison of those in the middle of the ground, viz. because being much dried, their fibres harden sooner, and therefore they cannot grow so kindly as those in the middle of the ground, which, by shade, are always kept moister, and more ductile.

The same curious author proceeds as follows: Now there being 1000 hills in an acre of Hop-ground, and each hill having three poles, and each pole three Vines, the number of Vines will be 9000, each of which perspiring four ounces, the sum of all the ounces perspired by an acre in twelve hours day will be 36000 ounces = 15750000 grains = 62007 cube inches, or 220 gallons, which divided by 6272640, the number of square inches in an acre, it will be found, that the quantity of liquor perspired by all the Hop-vines will be equal to an area of liquor as broad as an acre, and $\frac{1}{157}$ part of an inch deep, besides what evaporated from the earth.

And this quantity of moisture, in a kindly state of the air, if daily carried off, is a sufficient quantity to keep the Hops in a healthy state; but in a rainy moist state of air, without a due mixture of dry weather, too much moisture hovers about the Hops, so as to hinder, in some measure, the kindly perspiration of the leaves, whereby the stagnating sap corrupts, and breeds mouldy

mouldy fen, which often spoils vast quantities of flourishing Hop-grounds.

This was the case in the year 1723, when for ten or fourteen days almost continual rains fell, about the latter half of July, after four months dry weather, upon which the most flourishing and promising Hops were all infected with mould, or fen, in their leaves and fruit, while the then poor and unpromising Hops escaped, and produced plenty, because they, being small, did not perspire so great a quantity as others, nor did they confine the perspired vapour, so much as the large thriving Vines did in their shady thickets.

This rain on the then warm earth, made the Grass shoot out as fast as if it were in a hot-bed, and the Apples grew so precipitately, that they were of a fleshy constitution, so as to rot more remarkably than had ever been remembered.

The planters observe, That when a mould, or fen, has once seized any part of the ground, it soon runs over the whole, and that the Grass; and other herbs under the Hops, are infected with it, probably, because the small seeds of this quick-growing mould, which soon come to maturity, are blown over the whole ground; which spreading of the seed may be the reason why some grounds are infected with fen for several years successively, viz. from the seeds of the last year's fen. Might it not then be advised to burn the fenny Hop-vines, as soon as the Hops are picked, in hopes thereby to destroy some of the seed of the mould?

Mr. Austen, of Canterbury, observes fen to be more fatal to those grounds that are low and sheltered, than to the high and open grounds, to those that are shelving to the north, than to those shelving to the south; to the middle of grounds than to the outsidings; to the dry and gentle grounds, than to the moist and stiff grounds.

This was very apparent throughout the plantations where the land had the same workmanship and help bestowed upon it, and was wrought at the same time. But if in either of these cases there was a difference, it had a different effect, and the low and gentle grounds, that lay neglected, were then seen less distempered than the open and moist, which were carefully managed and looked after.

The honey dews are observed to come about the 11th of June, which, by the middle of July, turn the leaves black, and make them stink.

Dr. Hales relates, That in the month of July (the season for fire-blasts, as the planters call them) he has seen the Vines in the middle of the Hop-ground scorched up almost from one end of a large ground to the other, when a hot gleam of sun-shine has come immediately after a shower of rain, at which time vapours are all seen with the naked eye, but especially with reflecting telescopes, to ascend so plentifully as to make a clear and distinct object become immediately very dim and tremulous; nor was there any dry gravelly vein in the ground along the course of this scorch; it was therefore, probably, owing to the much greater quantity of scorching vapours in the middle, than the outsidings of the ground, and that being a denser medium, it was much hotter than a more rare medium.

And, perhaps, the great volume of ascending vapours might make the sun-beams converge a little towards the middle of the ground, that being a denser medium, and thereby increase the heat considerably; for he observed, That the course of the scorched Hops was in lines at right angles to the sun-beams about eleven o'clock, at which time the hot gleam was.

The Hop-ground was in a valley which ran from south-west to north-east, and to the best of his remembrance, there was but little wind, and that in the course of the scorch; but had there been some other gentle wind, either north or south, it is not improbable but that the north wind gently blowing the volume of rising wreek on the south side of the ground, that side might have been most scorched, and so vice versa.

As to particular fire-blasts, which scorch here and there a few Hop-vines, or one or two branches of a tree,

without damaging the next adjoining, what astronomers observe, may hint to us no very improbable cause of it, viz. They frequently observe (especially with reflecting telescopes) small separate portions of pellucid vapours floating in the air, which, though not visible to the naked eye, are yet considerably denser than the circumambient air; and vapours of such a degree of density may very probably either acquire such a scalding heat from the sun as will scorch what plants they touch, especially the more tender.

(An effect which the gardeners about London have too often found to their cost, when they have incautiously put bell-glasses over their Cauliflowers early in a frosty morning, before the dew was evaporated off them; which dew, being raised by the sun's warmth, and confined within the glass, did there form a dense, transparent, scalding vapour, which burned and killed the plants:)

Or, perhaps, the upper or lower surface of these transparent, separate, flying volumes of vapours, may, among the many forms they revolve into, sometimes approach so near to an hemisphere, or hemicylinder, as thereby to make the sun-beams converge, so as often to scorch the more tender plants they shall fall on, and sometimes also parts of the more hardy plants and trees, in proportion to the greater or lesser convergency of the sun's rays.

The learned Boerhaave, in his Theory of Chymistry, p. 245, Shaw's edition, observes, That those white clouds which appear in summer time, are, as it were, so many mirrors, and occasion excessive heat. These cloudy mirrors are sometimes round, sometimes concave, polygonous, &c. When the face of heaven is covered with such white clouds, the sun shining among them, must, of necessity, produce a vehement heat, since many of his rays, which would otherwise, perhaps, never touch our earth, are hereby reflected to us. Thus, if the sun be on one side, and the clouds on the opposite one, they will be perfect burning-glasses.

I have sometimes (continues he) observed a kind of hollow clouds full of hail and snow, during the continuance of which the heat was extreme, since, by such condensation, they were enabled to reflect more strongly. After this came a sharp cold, and then the clouds discharged their hail in great quantity, to which succeeded a moderate warmth. Frozen concave clouds, therefore, by their great reflexions, produce a vigorous heat, and the same, when resolved, excessive cold.

From which Dr. Hales observes as follow:

Hence we see, that blasts may be occasioned by the reflexions of the clouds, as well as by the above-mentioned refraction of dense transparent vapours.

About the middle of July Hops begin to blow, and will be ready to gather about Bartholomew-tide. A judgment may be made of their ripeness, by their strong scent, their hardness, and the brownish colour of their seed.

When by these tokens they appear to be ripe, they must be picked with all the expedition possible; for if at this time a storm of wind should come, it would do them great damage, by breaking the branches, and bruising and discolouring the Hops; and it is very well known, that Hops, being picked green and bright, will sell for a third part more than those which are discoloured and brown.

The most convenient way of picking them is into a long square frame of wood, called a bin, with a cloth hanging on tenter-hooks within it, to receive the Hops as they are picked.

The frame is composed of four pieces of wood joined together, supported by four legs, with a prop at each end to bear up another long piece of wood, placed at a convenient height over the middle of the bin; this serves to lay the poles upon which are to be picked.

This bin is commonly eight feet long, and three feet broad; two poles may be laid on it at a time, and six or eight persons may work at it, three or four on each side.

It will be best to begin to pick the Hops on the east

or north side of your ground, if you can do it conveniently; this will prevent the south-west wind from breaking into the garden.

Having made choice of a plot of the ground containing eleven hills square, place the bin upon the hill which is in the center, having five hills on each side; and when these hills are picked, remove the bin into another piece of ground of the same extent, and so proceed till the whole Hop-ground is finished.

When the poles are drawn up to be picked, you must take great care not to cut the binds too near the hills, especially when the Hops are green, because it will make the sap to flow excessively.

And if the poles do not come up without difficulty, they should be raised by a piece of wood in the nature of a lever, having a forked piece of iron, with teeth on the inside, fastened within two feet of the end.

The Hops must be picked very clean, i. e. free from leaves and stalks, and, as there shall be occasion, two or three times in a day the bin must be emptied into a Hop-bag made of coarse linen cloth, and carried immediately to the oast, or kiln, in order to be dried; for if they should be long in the bin, or bag, they will be apt to heat, and be discoloured.

If the weather be hot, there should no more poles be drawn than can be picked in an hour, and they should be gathered in fair weather, if it can be, and when the Hops are dry: this will save some expense in firing, and preserve their colour better when they are dried.

The best method of drying Hops is with charcoal on an oast or kiln, covered with hair-cloth, of the same form and fashion that is used for drying malt. There is no need to give any particular directions for the making it, since every carpenter, or bricklayer, in those countries where Hops grow, or malt is made, knows how to build them.

The kiln ought to be square, and may be of ten, twelve, fourteen, or sixteen feet over at the top, where the Hops are laid, as your plantation requires, and your room will allow. There ought to be a due proportion between the height and breadth of the kiln, and the beguils of the steddle where the fire is kept, viz. if the kiln be twelve feet square on the top, it ought to be nine feet high from the fire, and the steddle ought to be six feet and a half square, and so proportionable in other dimensions.

The Hops must be spread even upon the oast a foot thick or more, if the depth of the curb will allow it, but care is to be taken not to overload the oast, if the Hops be green or wet.

The oast ought to be first warmed with a fire before the Hops are laid on, and then an even steady fire must be kept under them; it must not be too fierce at first, lest it scorch the Hops; nor must it be suffered to sink or slacken, but rather be increased till the Hops be near dried, lest the moisture, or sweat, which the fire has raised, fall back, or discolour them. When they have lain about nine hours, they may be turned, and in two or three hours more they may be taken off the oast. It may be known when they are well dried by the brittleness of the stalks, and the easy falling off of the Hop leaves.

The Dutch and Flemings have another method of drying their Hops: they make a square kiln, or room, about eight or ten feet wide, built of brick or stone, having a door at one side, and a fire-place in the middle of the room, on the floor, about thirteen inches wide within, and thirteen inches high in length from the mouth of it, almost to the back part of the kiln, a passage being left just enough for a man to go round the end of it; this they call a horse, such as is commonly made in malt-kilns, the fire passing out at the holes at each side, and at the end of it.

The bed, or floor, on which the Hops lie to be dried, is placed about five feet high above; about that is a wall near four feet high, to keep the Hops from falling.

A window is made at one side of the upper bed, to shove off the dry Hops down into a room prepared to receive them. The beds are made of laths, or rails, sawn very even, lying a quarter of an inch distant from

one another, with a cross beam in the middle to support them; the laths are let in even with the top of the beam, and this keeps them even in the places; this they call an oast.

The Hops are laid on this bed by baskets full, without any oast-cloth, beginning at one end, and so going on till all is covered, half a yard thick, without treading them; then they even them with a rake, that they may lie of equal thickness.

This being done, they kindle the fire below, either of wood or charcoal, but the latter is accounted the better fuel for Hops; this fire is kept as much as may be at an equal or constant heat, and only at the mouth of the furnace, for the air will sufficiently disperse it.

They do not stir them till they are thoroughly dried, i. e. till the top is as fully dried as the bottom; but if they find any place not to be so dry as the rest, (which may be known by reaching over them with a stick or wand, and touching them in several places,) they observe where they do not rattle, and where they do; and where they do not rattle, they abate them there, and dispose of them where the places were first dry.

They know when they are thoroughly dry, by the brittleness of the inner stalk, if it be short when it is rubbed; which when they find, they take out the fire, and shove out the Hops at the window that is made for that purpose, into the room made to receive them, with a coal-rake made with a board at the end of a pole, and then go in at a door below, and sweep up the Hops and seeds that fall through, and put them to the other Hops; then they lay another bed of green Hops, and renew the fire, and proceed as before.

This method is disapproved by some, because (they say) the Hops lying so thick, and not being turned, the under part of them must needs dry before the upper; and the fire passing through the whole bed to dry the uppermost, must necessarily over-dry, and much prejudice the greatest part of the Hops, both in strength and weight, besides the unnecessary expense of firing, which must be long continued to dry thoroughly so many together.

Therefore some have improved on this method, and advised to make the kiln much as is before directed as to the Dutch way.

First to make a bed of flat ledges about an inch thick, and two or three inches broad, sawn, and laid across one another the flat way, chequerwise, at about three or four inches distance one from the other, the edges being so entered one into the other, that the floor may be even and smooth; this bed may be made to rest on two or three joists, set edgewise to support it from sinking.

This bed is to be covered with large double tin, soldered together at each joint, and the ledges must be so ordered, before they are laid, that the joints of the tin may always lie over the middle of the ledge, the bed being wholly covered over with tin: boards must be fitted about the edges of the kiln, to keep up the Hops, but one side must be made to remove, that the Hops may be shoved off as before.

On this bed, or floor of tin, the Hops may be turned without such hazard or loss, as upon the hair-cloth: and also it will require a less expense of fuel, and, besides, any sort of fuel will serve in this kiln, as well as charcoal, because the smoke does not pass through the Hops as it does the former ways, but then care is to be taken, that there be passages made for it at the several corners and sides of the kiln.

It is found by experience, that the turning of Hops, though it be after the most easy and best manner, is not only an injury and waste to the Hops, but also an expense of fuel and time, because they require as much fuel, and as long a time, to dry a small quantity, by turning them, as a large one.

Now, this may be prevented, by having a cover (to be let down and raised at pleasure) to the upper bed whereon the Hops lie.

This cover may also be tinned, by nailing single tin plates over the face of it, so that when the Hops begin

to dry, and are ready to burn, i. e. when the greatest part of their moisture is evaporated, then the cover may be let down within a foot, or less, of the Hops (like a reverbatory) and will reflect the heat upon them, so that the top will soon be as dry as the lowermost, and every Hop be equally dried.

As soon as the Hops are taken off the kiln, lay them in a room for three weeks or a month to cool, give, and toughen; for if they are bagged immediately, they will powder, but if they lie a while (and the longer they lie the better, provided they be covered close with blankets to secure them from the air,) they may be bagged with more safety, as not being liable to be broken to powder in treading, and this will make them bear treading the better, and the harder they are trodden, the better they will keep.

The common method of bagging is as follows; they have a hole made in an upper floor, either round or square, large enough to receive a Hop-bag (which consists of four ells and a half of ell-wide cloth, and also contains ordinarily two hundred and a half of Hops) they tie a handful of Hops in each lower corner of the bag, to serve as handles to it, and they fasten the mouth of the hole, so placed that the hoop may rest upon the edges of the hole.

Then he that is to tread the Hops down into the bag, treads the Hops on every side, another person continually putting them in as he treads them, till the bag is full, which being well filled and trodden, they unrip the fastening of the bag to the hoops, and let it down, and close up the mouth of the bag, tying up a handful of Hops in each corner of the mouth, as was done in the lower part.

Hops being thus packed, if they have been well dried, and laid up in a dry place, they will keep good several years; but care must be taken, that they be neither destroyed nor spoiled by the mice making their nests in them.

The crop of Hops being thus bestowed, you are to provide for another, first by taking care of the poles against another year, which are best to be laid up in a shed, having first stripped off the haulm from them; but if you have not that conveniency, set up three poles in the form of a triangle, or six poles (as you please) wide at the bottom, and having set them into the ground, with an iron pitcher, and bound them together at top, set the rest of your poles about them; and being thus disposed, none but those on the outside will be subject to the injuries of the weather, for all the inner poles will be kept dry, unless at the top; whereas, if they were on the ground, they would receive more damage in a fortnight, than by their standing all the rest of the year.

In the winter time provide your soil and manure for the Hop-ground against the following spring.

If the dung be rotten, mix it with two or three parts of common earth, and let it incorporate together till you have occasion to use it in making your Hop-hills; but if it be new dung, then let it be mixed as before, till the spring come twelvemonths, for new dung is very injurious to Hops.

Dung of all sorts was formerly more commonly made use of than now it is, especially when rotted, and turned to mould, and they who have no other manure must use it; which, if they do, cows or hogs dung, or human ordure mixed with mud, may be a proper compost, because Hops delight most in a manure that is cool and moist.

Some recommend chalk, or lime, as the best manure, except in cold lands, and in such, pigeons dung will do best; a little of which laid to a hill, and so mixed, that it may not be too hot in a place, is of great advantage.

[Hop Grounds in Kent.]

The principal part of the plantations of East Kent are on a good deep rich loamy surface, with a deep subsoil of loamy brick earth. There are however some good grounds, where the surface is very flinty, and some of a gravelly nature; but these are very inferior. The Hops growing about Canterbury and in East Kent are of a very fine rich quality, and if well managed, of a good colour. Middle Kent also,

or the country round Maidstone, the original spot where Hops were first planted, grows a great quantity, most of which is likewise of a very good quality; though some, being planted on land not fit for Hops, is coarse.

When a piece of land is intended to be planted, plough the land as deep as possible early in October, and harrow it level; they mete or measure it each way with a four-rod chain, placing pieces of reed or stick at every tenth link, to mark the place of the hills, which makes one thousand to an acre. Some few grounds are planted eight hundred, and some twelve hundred to an acre. Some are planted wider one way than the other, to admit ploughing between the hills; but this practice, although it has been tried many years, does not seem to increase, on account of the difficulty of digging along the rows where the plough cannot go; that part being much trodden with the horses in ploughing digs so much the worse, that an extraordinary expense is incurred, which in some measure defeats the economy of the plan. When the hills are marked out, holes are dug about the size of a gallon, which are filled with fine mould, and the nursery plants placed in them.

Some put three plants, others two, and some only one good one to each hole. If cuttings be planted, the holes are dug in the spring, as soon as cutting-time commences; some fine mould is provided to fill up the holes, in which four or five cuttings are placed, each three or four inches in length: they are covered an inch deep with the fine mould, and pressed down close with the hand. Cuttings do not require any sticks; but nursery-plants must have sticks or small poles, six or seven feet high the first year: in both cases the land is kept clean during the summer by horse and hand hoeing: the next winter it is dug, and early in the spring the old binds are cut off smooth, about an inch below the surface; a little fine mould is then drawn over the crown of the hills. As soon as the young shoots appear, so that the hills may be seen, they are stuck with small poles, from seven to ten feet long, in proportion to the length it is expected the bind will run; these poles are called seconds, and are generally bought in the woods at from five shillings to eight shillings the hundred, and three of them are placed to each hill. As soon as the binds are about two feet in length, women are employed to tie them to the poles: and the land is kept clean during the summer with horse and hand hoeing as before.

The proper time for gathering them is known by the Hop rubbing freely to pieces, and the seed beginning to turn brown. They are picked in baskets containing five bushels each, and are carried to the oast in bags, at noon and evening, for drying. Great care and skill are necessary in this branch of the business; the smallest neglect or ignorance in the management of the fires will spoil the Hops, and occasion great loss to the planter. When dried and sufficiently cool to get a little tough, so as not to crumble to powder, they are put into bags or pockets; the former containing two hundred weight and a half, the latter a hundred and quarter: they are then trodden very close, and weighed by the exciseman.

The second year after planting, full sized poles from fifteen to twenty feet in length, according to the strength of the land, costing from sixteen shillings to thirty-six shillings the hundred, are placed to the hills instead of the seconds, which are removed to younger grounds. Here great care is necessary not to over-pole; for thus young grounds are often much weakened: and it is equally necessary not to overdung them, as that will make them mouldy. Fifty cart-loads of well-rotted farm-yard dung and mould, once in three years, are generally esteemed sufficient for an acre of land^p.

In order to have Hops of a good quality: 1st. They ought to be ripe before they are gathered; and in getting so, they pass from a green to a rich yellow colour. 2dly. They ought to grow on a soil, that instead of enlarging the size of the Hop, grows them

^p Boys in Agric. Survey of Kent, 117 8^o edit.

full of farina (provincially condition). 3dly. They ought to be very much but slowly dried, and then packed for market in the thickest covering that can be found, to preserve their strength. The colour of Hops that hang till they are ripe can never be so beautiful as if they were gathered green, for they are generally bruised by the equinoctial winds. But the quality of their bitter is superior in flavour, goes farther, and will never deceive in brewing; they will also keep good, when full dried, many years^a.

The implements necessary to a Hop-ground are,

1. An oast (to every plantation of four or five acres) about sixteen feet square, which built substantially with the requisite stowage room, costs from 150l. to 200l.

2. A set of picking baskets, about twelve in number, which cost about 5s. 6d. each. Also a good scale-beam with weights and scales, which together cost about 5l.

3. A skim made with a frame like a wheelbarrow, which cost about two guineas. This implement is very useful for tearing up weeds on summer-fallows.

4. A harrow to be drawn by one horse, with a small wheel in front, to go round at the ends of the plantation, and a pair of handles to be holden by the man who follows it, in order to keep it from bruising the binds. It costs 1l. 15s.

5. An iron peeler to make holes in the land for the poles, costing 6s. or 7s.: and a hop-dog to wrench them up, costing 5s.^c

Hop Grounds in Surry.

Mr. Miller mentions only three varieties of the Hop. In Surry they have what they call the Orchard Hop, which bears a long square strobile, and is perhaps the same with Mr. Miller's first. The streaked Bind. Two or three varieties of White Bind. Smooth and rough Red Bind. The most esteemed are the Streaked and the White Bind. The smooth Red is of little value; and as to the last, it is generally eradicated whenever it appears. The White Canterbury Bind is mostly in use. The Golden Hop with a white Bind, which is probably the same with Mr. Miller's Oval Hop, ripens later than the other, and therefore on that account may be useful to the planter. There is also the Cluster Hop, produced from a White Bind, but having the Hops growing more in clusters than the others. The streaked Bind is a desirable Hop for a part at least of a plantation, being early, of a pleasant flavour, and generally of a good size. As to the term Garlick, it is not appropriate to any one variety; for they will all acquire that sort of smell from distemper.

As to the soil, there will be no doubt of Hops thriving when there is good marl or chalk, or even a moist rock at bottom, with a surface of tolerably deep mould frequently manured.

In the preparation for planting, and the manner of it, the practice is very various. The ground is generally ploughed and harrowed well the winter before it is intended to be planted; but it does not seem necessary: for by the time the workmen have gone over it, first to set out the hills, and then to dig the holes and plant the Hops, the ground becomes so trodden as to be little the better for ploughing. A better method seems to be to prepare the ground well the summer before, and sow it with Turneps, by which means it is thoroughly clean; and early in winter, (or if in autumn the better) either to pull up the Turneps or feed them off with sheep, as occasion may require; and so let it remain till the spring; and then plant the Hops, and immediately dig the ground. Sow Turneps again the ensuing summer, and as these must be hoed twice, the young Hops are cleaned at the same time. When they are spent, care must be taken, if they are fed off on the ground, to do it in dry weather. Thus the land is dressed by the sheep, and will not require so much dung at first. Beans also or Potatoes may be planted the first year between the hills; and by either mode something is made of the ground, for the Hops

yield nothing that year, and indeed very little for profit the second.

In Surry they have not the practice of planting Cherry or Apple trees as in Kent. About Alton they generally plant their Hops six feet square; but about Farnham they plant much nearer: the superiority of their soil enables them to do this with success; but in blighting years they suffer more than the Alton planters; the circulation of air being much obstructed by the closeness of the hills.

October is the most proper season for planting with cuttings of the last year, or nursery plants, as they are usually called; and march, if you plant with cuttings of the same spring, that being the time of cutting Hops in general.

With regard to manuring the Hop-ground, every other year is often enough, and then about twenty dung-cart loads on an acre. It is the more frequent practice to lay the dung on the crown of the hill, that the rains in winter may wash it down to the roots: but some spread the dung over the ground in autumn, and seldom dig it in before february. Part of it is brought to the hills in the course of hilling the Hops in summer; and part remains in the intervals for the nourishment of the fibres.

In cutting the Hops, a necessary caution should be observed respecting such as are young, not to use the knife too freely the first year. At this age a sufficient number of joints should be left below the knife; and if the plants are weak, it may be as well only to trim off the dead bind of the last year.

As to the length and size of the poles experience must direct the planter: but it is undoubtedly better to underpole, than to use such poles as the Hop cannot over-climb.

After tying follows hoeing and the first hilling; then the second hoeing and hilling, which finishes the business of cultivation; and ought to be done before the fibres get out much in the intervals, lest these be disturbed, and of course the growth of the Hops be checked. A very useful implement in this business is a triangular harrow drawn by one horse, so constructed that the tines may break up all the ground. It not only roots up the weeds, but by loosening the surface expedites the workman's labour, and keeps the ground from cracking, especially after the last hilling, when it is scraped over smoothly by the hoe in drawing up the hills. A man with a boy to lead the horse will go over three acres in a day.

The Hop-grower has many enemies to dread. A fly similar to that which is so injurious to Turneps attacks them on their first appearance in the spring, and sometimes destroys the first shoots entirely: it is a very small animal, and on going near to touch it, retreats into the ground with the nimbleness of a bed-flea. A handful of ashes scattered over every hill is very serviceable in driving them away. The next enemy is the fly mentioned by Mr. Miller, by which he means the long-winged fly, as it is here called. The appearance of these animals is dreaded by the planter as a pestilence; they are the forerunners of lice, and in the end generally prove fatal to the crop. It is an opinion with many that rain will wash them off, but in this they are undoubtedly mistaken, for they mostly shelter themselves on the under side of the leaf, where no rain can touch them. Lightning seems to be their greatest enemy. Honey-dews are likewise very injurious to Hops; causing their leaves to turn black, shrink and at length fall off. They are sometimes so affected with this distemper and the lice united, as to perish entirely, and require to be planted anew for many hills together. Another calamity to which Hops are liable is the Red Blight. This seldom attacks them until the time of their coming to maturity; causing the Hops to turn reddish, or rather of deep yellow, and the leaves frequently to grow pale and sickly. When this is the case, they acquire a garlick-like smell, and ought to be picked with the greatest expedition. This disorder being incident to particular lands, those especially of a light and weak nature, it appears rather to be a natural decay than a blight.

Experience will best teach the planter when his Hops are

^a Ibid. app. 188.

^c Ibid. p. 49. & 120.

are fit for picking. It is however the more prudent way to begin too soon than too late, as the high winds which prevail towards the equinox many times produce more injury to the planter, than he would sustain by beginning a day or two before his Hops were thoroughly ripe. It is the prevailing opinion that the last-picked Hops will weigh heavier when dried than the first. This however is an error; for in the year 1788 I began picking Hops on the 18th of august, being induced by the extreme scarcity of Hops in London, and knowing that I should get a great price at that market. I was however at the same time persuaded that they were ripe enough not to lose their colour on the kiln. By the 28th of august I was enabled to send near a ton to London, where I got some pounds for the hundred weight more than I did afterwards at Weyhill. Having cleared my kiln, and bagged off all that I had gathered, I had a fair opportunity of judging of the different weights of the first and last pickings, and on comparison I found that the advantage lay on the side of the first. A bushel of green Hops, in a favourable year, when they are well conditioned will yield about a pound and half in weight when dry.

Hop Grounds in Worcestershire.

The different sorts of Hop cultivated here, are the red, the green, and the white. A various cultivation, the real source probably of these first distinctions, has introduced a variety of each, though differing little more than in name and degree, of the same colour, shape, and size. There are two, however, in more particular esteem, both with the planter and merchant; the Golding Vine, brought from the neighbourhood of Canterbury, and the Mathan White, the name of which denotes it to be a native of this plantation, and of the parish of that name. The most hardy, that which will flourish with the least attention, and is least liable to suffer from the seasons, is the red; perhaps the original stock. The next is the green; which is also the most productive. The tenderest, though at the same time the more valuable, is the white. The plantations of this county are principally to the west of the Severn, increasing as they approach the banks of the Teame, and the confines of Herefordshire. The situations preferred, are a gentle descent, with a south, south-west, or western exposure, screened at a distance to the north and east by high ground, or plantations of timber; but not so as to prevent a free ventilation: the soil, a deep loamy land, or strong clay, after it has been thoroughly limed and manured: but above all, a boggy soil, when completely drained, and duly meliorated, is said to produce the best Hops.

When meadow or pasture land is broke up for this purpose, it is either dug, or the sward, being first pared thinly off by the paring plough, it is buried by the furrow plough, working full ten inches deep. Old tillage, when converted into Hop-grounds, requires to be very completely cleared of woods; to be thoroughly manured, and to have the ridges, provincially lands, entirely levelled. The different manners in which they are worked, are, the tump, and the ploughed grounds; the former by hand, and the latter by the plough: those are laid out in the quincunx form, each tump (or hill) being at the distance of from five to seven feet from the centre of each other. On these, the distance between the stocks, is from three to four feet; that between the rows, from seven to nine; the greater or less space being always allowed, as the land is either richer or poorer. In the ploughed, if the circumstances of the ground will admit of it, the rows run mostly north and south, with a view to admit the sun more generally when it has most force; but should it be long and narrow, its greatest length extending east and west, that direction is preferred: there are those who give it the preference when not influenced by any accidental circumstances, as receiving the morning sun, by which the chill of the night is soonest dissipated. The sets are procured from the shoots, or roots of the stocks, at the annual time of dressing, the latter end of march, or beginning of april. They must have two joints each,

the roots striking from that in the ground, and the vine shooting from that above. Four are planted to a stock, at the distance of about four or six inches from each other, all inclining or pointing, so as to meet together in the centre.

There are two methods observed in planting young Hop-grounds; the first and more general is, to plant the sets on the situation in which they are to remain, immediately after they are parted from the old stocks. In the other, the sets are planted in nurseries, in rows about three inches asunder, with about five or six inches between the rows; here they grow till the month of october, when they are transplanted into the Hop-ground. Under this latter management, if the roots are good, one will be sufficient for a stock. In removing them, great care must be taken to make the opening to receive them so large, as not to confine the roots; when planted from the stocks, a hole made with a peg, to place them in, is all that is required. The nursery has certainly great advantage; besides the saving of a considerable expense, where the sets are to be purchased, the land may be worked through the summer, to prepare it for the plantation. During the first year, the grounds are ploughed, or hoed, provincially kerfed, three times. They produce no Hops; but a good crop of Pease, Beans, Cabbage, or Turneps, is obtained between the rows. The second year they are poled, and yield half a crop: the third year, they are in perfection. When they have reached this state, the management is uniformly as follows:—They are gone over, mostly four times, with the plough or kerf, beginning about march. The first business is to throw down the tumps, and rows of the former year, and to work in the manure, previously brought on in the winter. This consists of fresh earth, rotten dung, or a compost of dung, earth, and lime, judiciously proportioned, according to the nature of the soil; each acre receiving not less than sixty cart loads, for a good dressing—it is repeated, according as the nature of the land renders it necessary. The stocks are now pruned, the remains of the old vines, and superfluous shoots, are removed with the hop-knife. The second moulds up the tumps and rows; the succeeding ones complete moulding up the plants, and destroy the weeds. The tumps are formed round, flat at top, and about twenty inches diameter, and somewhat broader at their bottom. The ploughed lands are thrown up much in the same manner as for Potatoes, or Beans, only higher, and with more soil. The shoots begin to appear in april, and the poles are pitched the latter end of the same month, or beginning of may. These are set two or three to a stock, at a foot distance from each other, with great regularity and exactness, and inclining a little outwards, over the alleys. Some attention is necessary, in this part of the business, not to overpole the plants, either in number, or length of the poles, as it weakens them; and by drawing the vine out to too great a length, renders them less productive. About the close of this month, and beginning of june, women are employed to direct the vine to the poles, and tie them with dried rushes. This is continued till they are out of reach. The only care now remaining is, to keep under weeds, and to go over the plantations occasionally, to replace any vines that may stray, and repair any damage the plants or poles may have received from the weather. When they have reached their full growth, which is, in some measure, regulated by the number and length of the poles, the side shoots put out. The method of topping the vines, to promote the lateral shoots, said to be practised in other plantations, is never used in this.

About the second week in september they ripen, when the hop-pulling begins. In a plentiful year, it continues six weeks, more or less, according to the crop. The cribs are now placed, beginning on that part which lies most exposed to the sun, as being soonest ripe; one, two, or more, as the proprietor's plantation is large or small, and he has the convenience of kilns to dry them. Each crib has eight or ten pickers, women and children; they pick, if there is a tolerable crop, and they are any ways industrious, from six to eight bushels each per diem, which is about a sackful

* Observations communicated by Mr. Prowting of Chawton.

sackful (the sack in which they are carried green to the kiln); eight of these sacks, when dried, make about one hundred weight; but in some seasons, though no ways negligent, they will fall short of one half of this quantity. The pickers come from the neighbouring counties; but the far greatest number out of Wales; some from thirty and forty miles distant. From the cribs, the Hops are conveyed to the kilns, four or five of the sacks alluded to before, at a time, on a horse, and are dried as soon as possible: they damage considerably, if suffered to lie long together before they are put on the kilns. They will heat in six or eight hours, and lose colour; to avoid which, the kilns are kept constantly employed day and night. The time the Hops take in drying, is from eight to twelve hours, according as they are ripe and dry. Great attention, and considerable judgment, are necessary in this part of the business, the whole of the year's expenses and labour, and at times property to some amount, being at stake on a single kiln—it is usually entrusted to those who have been long used to the practice. The general principle on which they proceed, is to begin with a very gentle fire, till warmed through; the heat is then gradually increased, and continued till the core (fruit stalk) is quite sunk and dry. They are then removed, and thrown together in a heap, in a corner of a large room, appropriated to this purpose, and frequently turned from one side to the other, in order to cool them completely before they are bagged.

The method of bagging is as follows:—A strong hoop is made fast round the mouth of the sack, which is then let down through a circular opening in the floor, made for this purpose; a few are first put in, when the man who is principal in this part of the business, gets in, and by constant treading, presses them down as close as he can. A second person is employed in breaking them (that is, tearing the flowers, &c. from the fruit stalk) and throwing them into the bag as they are wanted: thus they proceed till it is full, when the mouth is loosened from the hoop, and closed, leaving at each corner of the sack a space for the hand, for the better convenience of those who are employed in carrying them.

In the ground, nothing more is done, but stripping and piling the poles; these are always set up in them, about three hundred in a pile, sloping and propping each other, the better to withstand the wind. Different opinions are entertained respecting the superiority of the tump and plough management; the former has certainly the advantage in many particulars; and is said to be cheaper and more productive: but as it is impossible, from the present extent of the plantation, that any considerable proportion can be worked in this manner, from want of hands, the enquiry cannot be of much consequence. The expenses of these plantations may be calculated from the following statement:—As they always occupy the most valuable tract on the farm, the rent cannot be set down lower than thirty-one shillings per acre, in some instances it is much higher. The acre is not to be estimated as statute measure, but after the rate of one thousand stocks to the acre, which is in general one-fifth less. The expense of manure is very heavy, as they produce none, except the ashes from the burning of the vines and leaves; so that were justice done to the rest of the land, the greater part ought to be procured from home. The price of dung (provincially muck) in general, is about six shilling per waggon-load, or three shillings per ton; (if from stables, in which horses are fed plentifully with corn, the price runs higher in proportion) and is frequently to be fetched eight or ten miles.

The Hop-grounds are worked sometimes through the several seasons, as they are termed, at a fixed price, which is from fifteen shillings to twenty shillings per acre, according to the different quality of the soil. The seasons are four, and thus divided:—throwing down and cutting, spreading and pitching poles, kerfing and tumping, stripping and piling poles: otherwise the workman receives his usual pay of one shilling per day, with drink; or some parts are taken by the acre, as pitching poles three shillings, stripping and piling two shillings and six-pence to three shillings and

six-pence. The women employed to tie the vine receive six-pence per day, with two quarts of drink; or they take them by the year, at three shillings or three shillings and six-pence per acre. The Hop pullers receive from six-pence to eight-pence per day, with a pint of thickened milk, or something similar, for breakfast every morning; two quarts of drink per day, and two dinners every week. The pole-man, he who brings and removes the poles, has all his meals, drink, and from four shillings to six shillings per week. The coal (pit-coal charred) with which they are dried, is also an expense of considerable consequence; it is chiefly procured at Pinfax, in this county, at a distance of several miles from some of the plantations, where it costs two-pence halfpenny or three-pence per bushel; twenty-eight bushels are a ton, and it takes two tons of coal to dry one of Hops. The drier is paid from twelve shillings to twenty-one shillings per week, varying according to the number of kilns he has to attend: he has also his meals and drink. He who has the management of the bagging, is paid four-pence per hundred weight, exclusive of his assistant. There are different articles used for bagging: the Lubecks, and a sort of cloth manufactured at Dudley, in this county, are the most in use, and chiefly the latter. The price varies according to the demand. The Lubecks are dearest; they cost, in general, from twenty-eight shillings to thirty-four shillings per piece, and are thirty-six yards long, and about thirty-one inches wide. The Dudleys cost from twenty-two shillings to thirty-two shillings, and are of the same dimensions, each piece making eight sacks, four yards and three quarters long.

Most of the estates which grow many Hops, have plantations in which the poles are raised. Ash and barked oak are preferred; but willow, poplar, and alder are also used. Where the estate does not produce a sufficiency, they are bought at the woods and coppices in the neighbourhood, at from five shillings to fifteen shillings per hundred: their length is from eight to eighteen, or twenty feet, proportioned to the goodness of the lands; they last, with care, seven or eight years. The sets, when bought, cost from six-pence to two shillings and six-pence per hundred. The last expense is the duty, which is one penny per pound, and fifteen shillings per cwt. on the produce. The average of the expenses in general, is thus estimated: that of workmanship, from twenty-five shillings to thirty shillings per acre; those of picking, drying, charcoal, sack, and duty, thirty shillings per hundred weight. The implements used throughout this plantation are, the plough, the kerf, the spade, iron-crow, and the hop-knife. The plough is the common one of the district; the kerf is a large hoe, with a plate about nine inches broad, and thirteen deep; the spade needs no particular description; the crow is an iron bar, about four feet and a half long, generally square at top, with a large point, in the octagon form, used to make the hole in the ground in pitching the poles: the hop-knife resembles in make the sickle, an old one being often converted to this purpose, by grinding off its saw-edge, and giving it a sharp one in its stead; when made with new metal, it is something smaller. The crib into which the Hops are picked, is an open frame made of wood, standing about four feet high, four feet broad, and nine long. To the upper edge of this, is fastened the crib-cloth, which is nine yards double, made with the same stuff with the bags, but coarser and cheaper. The sacks in which they are conveyed to the kiln, are the same. The kiln will be afterwards described.

When the Hop-grounds are come to perfection, it is the general practice to exclude every other growth, and trust to them alone, for a return of the great expense at which they are cultivated. Under this management, those which have been uniformly attended to in their prime, and not weakened by over poling, will continue to produce plentifully from twenty to thirty years; and in some instances much longer, care being taken to replace the stocks that accidentally decay. On the other hand, fresh grounds are generally allowed to produce the finest Hops, and in greatest

abundance. A question of some difficulty arises, at what time it will answer best to give up the old, and plant new grounds, and must at last be determined by the peculiar circumstances of each plantation. But the error of continuing the old, as they often are, years after they have passed their prime, is self-evident. The first expense of the new, may weigh with the occupier who holds his farm by the year, or for a short term; but this is not the case with many of the principal planters. The same observation holds good with respect to the fruit plantations: these are often suffered to encumber the grounds, when there is scarce a hope left, that they may produce a crop anywise adequate to the expense of continuing them. This has given rise to the following practice, and were it universally adopted, it would probably prove advantageous to the planters in general:—The young Hop-grounds are planted at proper distances with fruit-trees; these, from the frequent turning the soil and manure, are found to thrive better; and of course come to perfection sooner, by this than any other management followed in this county. The constant attention to the fences necessary for the Hops, is of the greatest service to the trees, by protecting them from their greatest bane, the teeth and rubbing of cattle of every description. For years, there can be no doubt but the advantage to the trees more than compensates any loss the Hops sustain, considerably. Later, it is true, the trees prove prejudicial, by the spreading of their roots, and by their branches intercepting the light and heat of the sun; preventing also a free circulation of air. This, however, will not happen in any considerable degree, till they are fifteen or twenty years growth, the time when the Hops, under this management, may be expected to decline, and it will be necessary to apply the land to the purposes of which it is most capable as an orchard. In this method, there would always be a constant succession of young vigorous plantations of both produce. Those years in which the Hops fail, some return for the great labour and expense they are attended with, might be looked for from the fruit; a larger proportion of the land would share in turn that extraordinary attention which is now confined to those parts on which the Hops are grown. The crops of these would probably never rise so high as they occasionally do now; but it must be remembered, these are not those which pay the planters best, as all the expenses on the produce are the same, on a given weight, whatever price it bears. Moreover, the average produce of the plantations is now said to exceed the consumption: in the great years, such as the present, so much so, as to reduce the price so low as scarcely to repay the planter; they are, nevertheless, increasing: those of this county, within the last three years, have added one hundred and fifty acres to their former growth, and this, notwithstanding there appears but little prospect of any new markets for them being found: a very serious consideration, and highly deserving the utmost attention of the planters. If this statement proves true, the following practical inference may be with certainty drawn from it—that it will be advisable to forego some of those points which are particularly calculated to assist the crops of Hops alone, in favour of a produce, the value and consumption of which are constantly increasing.

The circumstance of those Hops which are most in request, ripening all at nearly one time, is a considerable inconvenience both to the owner, and holder of the estate: as they damage so soon, whether left on the wires when ripe, or gathered, if not dried immediately, it is necessary to have buildings, and a number of kilns in proportion to the size of the plantations, and more hands during the season, than would be otherwise wanting. Could those sorts which ripen earlier or later, be improved, or any others introduced, that do so, it would be a considerable acquisition. The parts necessary to perfect the seeds, are found on different plants; and as the greatest stress is laid on these, it may be proper to notice, that the practice of removing the barren stocks, may be carried too far: it is an enquiry well worth attending to, whether this

may not be the cause, in some instances, of the early decay on some grounds.

The following observations of Dr. Withering (Bot. arrang.) on the honey-dew, deserve to be introduced to the notice of the planters.—“If the hop-yards were covered with stones, the plants would be less liable to suffer from the honey-dew, or from the otter moth; for the honey-dew is the excrement of a species of louse (aphis); but these insects seldom increase so as to endanger the plant, unless it is in a weak condition; and the larvæ of the otter moth at the roots, first occasion the plant to be sickly. Now, when the Hop grows wild in stony places, and fissures of rocks, where the moth cannot penetrate to deposit its eggs, the Hop is never known to suffer from the honey-dew.”

Under this view of the disease, might not the practice of smoaking the fruit plantations, on the first alarm of a blight used in some fruit countries, be applied here to those of Hops? The other injuries to which they are liable, still remain without a remedy. A free circulation of the air through them, and complete draining of the land, are the only dependence. The use of the kerf is attended with one disadvantage, and which, when employed almost solely to destroy weeds, is of consequence: the person working with it, in some measure, defeats the intention of his labour, as he is continually treading down the soil again, he has thus loosened; and thus, in some degree, re-sets the weed he had but a little before turned up; but the greater dispatch made with it, more than can be done with the spade, will probably continue it that preference in which it is held.

The construction of the kiln is as follows—The brick-work rises perpendicular from the ground, to a height sufficient to admit of about two or three feet below the bars, or grate, on which the fire is made, and about six or seven above it. The dimensions at the base vary, according to the size required for the grate, and to give the brick-work sufficient strength to support the superstructure. The height of this is determined by that of the building, when it is not erected new for the purpose. At the top of the perpendicular brick-work, iron bars are fixed at right angles; on them are laid tiles, or large flat stones, where they can be procured; these are covered on the upper side with a coat of mortar. The name given to this part of the kiln, the spark stone, sufficiently denotes its use; it is placed in the centre, and of such size, as leaves room around it to admit the heat above, at the same time that it prevents the sparks from the fire being carried there. From this part, the brick-work becomes wider, overhanging gradually for about four feet, in a funnel shape, when it again rises perpendicular about two feet: here joists are worked in, at small distances from each other, and on these, laths are nailed, forming the floor. The brick-work is continued a foot higher, forming a breast-work round the top; on the floor, and round this breast-work, the hair-cloth is spread, in which the Hops are contained.

Hop-grounds in Essex.

The culture of Hops at Hedingham is perhaps as good as in any part of England; the quality of those at Farnham are superior. There are fifty-five or fifty-six acres here contiguous, remarkable for yielding an almost certain crop. The soil is a moory marsh, improved into a rich loam on the surface. They are persuaded here that Hops succeed better in very large plantations than in small ones; and observe that the outsides of the contiguous acres do not answer equally with the more central divisions. If a man therefore increases his Hop-ground, it should not be in distinct plantations, but united to what he had before. In Essex they are too apt to use long poles, even such as are two rods in length, and thirteen inches round at bottom, costing 3 l. a hundred.

In making a plantation they fallow the land a year,

¹ Pomeroy, in survey of Worcestershire, p. 46 to 57.

² Young's Ann. 18. 436.

³ Ibid. 2. 34.

ploughing three or four times. They plant in november, three sets to a hill, and a thousand hills to an acre. They put on no manure, if the land be good. They dig the ground over as soon as planted, on account of its being trodden.

In the second year nothing is done but keeping the ground clean, by skimming and harrowing; after michaelmas they put on sixty loads of compost to an acre. Glovers and taylors shreds are a good dressing.

In the third year in february they cut down to the crown of the plant or the black rind. At the end of march they pole the ground, three poles to a hill. The best poles are chestnut, ash, oak, fallow, maple, all fourteen years growth, if from a wood, or eleven from a plantation. After poling, they dig round the plants.

In drying, much attention is necessary, to vary it according to ripeness and dryness.

The best soil is a strong loam; clay and a light black mould are both bad.

The flea attacks the Hop as soon as it is out of the ground. Chalky land is much subject to it, and warm dry weather occasions it. The best remedy is to dung highly, in order that the plants may grow out of danger, which is at two feet high. They apply nothing to stop it, but a heavy shower of rain does it.

In june and july the green-fly blows them, when lice come, which do not appear to eat, but poison the leaf; they are worst in thick, cloudy, hot, moist weather; when honey-dews come also upon them. (The flies and lice are all Aphides, some of which have wings, others not; and the honey-dew is their excrement.)

Hops when ripening get mouldy at the tip, where the Hop joins the stalk. This is a sort of rottenness, and moist weather is bad for it: a close low plantation, too much sheltered, or near trees, will be mouldy, when an open free exposure escapes.

Hop-grounds in Suffolk.

The soil they plant on about Stowmarket, is a black loose moor, on a gravelly bottom, very wet and boggy, lying on a dead level with the little river that runs by the town; the more boggy and loose it is the better the Hops thrive, especially if the gravel be within three feet; the neighbouring grounds rise in such a manner as to shelter them very well. In preparing for Hops they form beds sixteen feet wide, by digging trenches about three feet wide, and two feet or two feet and a half deep, the earth that comes out being spread upon the beds, and the whole dug and levelled. Upon this in march they form holes six feet asunder every way, twelve inches diameter, and a spit deep, consequently there are three rows on each bed. Into each hole they put half a peck of very rotten dung, or rich compost, scatter earth upon it, and plant seven sets in each, drawing earth enough to them afterwards to form something of a hillock. Some in the first years sow Kidney Beans, or common Beans, or plant Cabbages; but others do not reckon this a good way. In two or three weeks, according to the season, they will be fit to pole with old short poles, to which they tie all the shoots or vines, and then keep the land clean by hoeing and raking; and at midsummer they hill them. The produce the first year is from three to one hundred weight of Hops on an acre.

Manure is not always given regularly, but amounts on an average to ten loads a year. They keep it till it would run through a sieve, which they prefer to a more putrid state.

Three poles are put to each hill. They are generally of ash, and the length they prefer is twenty-four feet. When a Hop rises much above a pole, they set another to take the shoot, to prevent its falling, impeding the circulation of air, and entangling with the poles of other hills.

A Hop garden will last almost for ever, by renewing the hills that fail, to the amount of about a score annually; but it is reckoned better to grub up and new plant in twenty or twenty-five years.

^y Young's Ann. 18. 451.

The only distempers to which they are subject are the fly and honey-dew; they know the blast and the red worm, but they are rare; the latter chiefly on dry land. They think lightning favourable; by killing flies and lice.

General observations.

Hops are occasionally very profitable, but they are very uncertain in their produce, and are sure to be very expensive. To lessen the expense of poling, and the trouble of picking, it has been suggested that planting Hops in form of an espalier might probably answer; for it is observed that when a pole falls, and another is obliged to be fixed in a lateral position, the Hops always bear more by being thus trained horizontally; and Hops in an espalier might be picked as forward as the planter chose without cutting the vines.

If Hops also were only planted in such soils and situations as are well adapted to them, there would be a much greater probability of an efficient crop; and thus though the expense would not be diminished, the average profit would be increased.

The quantity of Hops produced on different soils in different years, varies from almost nothing, or perhaps two hundred weight to twenty and even twenty-four hundred weight on an acre: but the average produce on middling soils may be estimated at six, and on such as are better, at seven or eight hundred weight; some speak of nine, and a good soil, with a run of favourable years, may yield such a produce, or even more, but it ought not to be looked upon as general. The expense on an acre of Hops may be estimated at about 30l., including rent, taxes, &c. Taking then 7 C. to be the average produce, the planters must evidently be losers when they sell for four guineas. Or taking 30l. as a standard, the price of Hops should vary according to the following table.

Quantity.	Price.
2 C. on an acre, 15 l. the hundred weight.	
3 —————	10
4 —————	7 10 s.
5 —————	6
6 —————	5
7 —————	4 5 8 $\frac{1}{2}$
8 —————	3 15
9 —————	3 6 8
10 —————	3
11 —————	2 14 6 $\frac{1}{2}$
12 —————	2 10
13 —————	2 6 1 $\frac{1}{2}$
14 —————	2 2 10 $\frac{1}{4}$
15 —————	2
16 —————	1 17 6
17 —————	1 15 3 $\frac{1}{2}$
18 —————	1 13 4
19 —————	1 11 7
20 —————	1 10 0

Neglecting small fractions in two or three instances: Whatever the grower gains more than this is profit. The average price of Hops has been estimated in different places, and by several persons in the same places at three guineas, at 4l. at 4l. 10s.; at 5l. and at 6l. 2s. or 3s. The average of the prices given in the table above is 3l. 17s. 11 $\frac{1}{2}$ d. nearly.

Savings might certainly be made in poles; in cultivating only on proper soils, as hinted above, where a less quantity of manure is wanted than on such as are congenial to this crop; or in the vicinity of great towns where manure may be had in great plenty; by an attention to the quality, operation and effect of different manures, with the best time of laying them on; by uniting the business of malster to that of hop-grower, by which means the malt-office may save the expense of building an oast, or kiln for drying them; and by other attentions of which the hop-planter ought to be the best judge. The tythe of Hops should be regulated; where the expense to the cultivator is so prodigious, nothing can be more reasonable.

^z Ibid. 2. 162.

^a Ibid. 2. 34. & 77.

In *Suffex*, brimstone is used in drying Hops: it is thought there to be a well-grounded opinion, that this is a very proper fuel, since the inflammable principle with which it abounds, by suddenly passing through the Hops, quickly dissipates the moisture, by which means the Hops are brought off with a better colour, and with much less fuel than in the ordinary way^b.

I do not know whether this is practised in the other countries where Hops are grown, but I rather suspect that brimstone is used more to gratify the eye than for any good purpose. Almost every thing, in manufactures as in common life, is sacrificed to appearance.

Though in very favourable soils, Hops may be continued on the same spot at pleasure, yet it is generally advisable to break up the hop-yard entirely in twenty or thirty years; and then the ground is in high order for almost any crops for some years after, particularly for Potatoes, of which an immense burden may be produced from such ground.]

HURA. (*The Mexican vernacular name.*)

Lin. gen. n. 1087. *Reich.* 1189. *Schreb.* 1475.

Juss. 391.

Class. 21. 8. Monoecia Monadelphia.

Nat. order of *Tricocce.*—*Euphorbie*, *Juss.*

GENERIC CHARACTER.

* *Male flowers.*

CAL. *Ament* from the divarication of the branches, oblong, drooping, covered with sessile, spreading florets, *scales* oblong.

Perianth within each scale of the ament, cylindric, two-leaved, truncate, very short.

COR. none.

STAM. *Filament* cylindric, a little longer than the calyx, peltate at the tip, rigid, below the tip twice or thrice verticilled with tubercles. *Anthers* two, immersed in each tubercle, oval, bifid.

* *Female flower in the same plant.*

CAL. *Perianth* one-leaved, cylindric, furrowed, truncate, quite entire, closely surrounding the germ.

COR. none.

PIST. *Germ* roundish, within the calyx. *Style* cylindric, long. *Stigma* large, funnel-shaped, plano-convex, coloured, twelve-cleft, blunt, equal.

PER. woody, orbiculate, or globular-flattened, torose, with twelve furrows, twelve-celled: cells dissilient, crescent-shaped, with an elastic dagger point at the end.

SEEDS solitary, compressed, suborbiculate, large.

ESSENTIAL CHARACTER.

MALE. *Ament* imbricated. *Perianth* truncated. *Cor.* none. *Filam.* cylindrical, peltate at the tip, surrounded by very many anthers in pairs.

FEM. *Cal.* and *Cor.* none. *Style* funnel-form. *Stigma* twelve-cleft. *Capf.* twelve-celled. *Seed* one.

SPECIES.

1. *Hura crepitans.* *Sand-box Tree.*

Lin. spec. 1431. *Juss.* 867. *Reich.* 4. 198. *hort.*

cliff. 486. *t.* 34. *Comm. hort.* 2. 131. *t.* 66.

Ebret. pict. *t.* 12. *Trew Ebret.* 34. 35. *f.* 1.

Hippomane 2. *Brown. jam.* 351.

Baruce ex Hura Celsa arbore. *Clus. exot.* 47. *Raii hist.* 1826. *n.* 24.—e pluribus nucibus arboris Huræ.

Baub. hist. 1. 333. *Sloan. jam.* 2. 186.

Quauhtlatlatzin seu Arbor crepitans. *Hern. mex.* 88.

DESCRIPTION, &c.

This grows naturally in the Spanish West-Indies, from whence it has been introduced into the British colonies of America, where some of the plants are preserved by way of curiosity. It rises with a soft woody stem to the height of twenty-four feet, dividing into many branches, which abound with a milky juice, and have scars on their bark, where the leaves have fallen off. The branches are garnished with heart-shaped leaves; those which are biggest are eleven inches long, and nine inches broad in the middle, indented on their edges, having a prominent midrib, with several transverse veins from that to the sides, which are alternate; these stand upon long slender foot-stalks. The male flowers come out from between the leaves, upon peduncles which are three inches long; they are formed into a close spike, or katkin, forming

^b Young's Ann. 22. 299.

a column, lying over each other like the scales of fish.

[It is simple, and either terminating or axillary. The female flowers are solitary, and very near the ament. The leaves are alternate, and accompanied by caducous stipules; the petiole is glandular above; the younger leaves are involuted^a.

Browne makes this tree of the same genus with the Mangeneel (Manchineel or Hippomane). The branches are divided alike in both; and the leaves, which stand in the same manner, reflecting a little backwards from the direction of the foot-stalks, are disposed pretty thick at the extremities of the branches, and have one gland only on each foot-stalk; whereas in the Manchineel there are two. This is full of a thick transparent juice, that of milk, both acrid; and the flowers, notwithstanding they differ in some degree, agree in the formation of the style and stigma, as well as in the disposition of the anthers; though the number of these be not the same in both. In this the fruit is regularly divided into cells: in that the nut or shell is harder, and the divisions not so regular; yet they are longitudinal, adjoining, in a number proportioned to the divisions of the stigma, and generally both regular and many in the younger germs, but some abortive as the fruit increases.

The fruit is very curious in its structure; and the tree, when it grows well, is very spreading and shady^b. It rises to the height of thirty-five or forty feet, and sometimes casts a shade of sixty feet diameter. But from the quickness of its vegetation, its parts are of so loose a texture, that a loud clap of thunder, or a sudden gust of wind, frequently causes the largest boughs to snap asunder. Nor is its trunk of any use, except for fire-wood^c.

Linneus says that the wood is fit for joists and spars: and that the juice, when it gets into the eyes, brings on blindness after the eighth day^d.

The seeds, according to Hernandez, when roasted, purge both upwards and downwards. Browne tasted one of them, and it appeared at first to be both mild and pleasant; but it soon began to warm and scald both his palate and throat; which induced him to look upon it as an improper purgative.

This tree was introduced here before 1733, by William Houstoun, M.D.*]

PROPAGATION AND CULTURE.

It is propagated by seeds, which should be sown early in the spring, in pots filled with light rich earth, and plunged into a hot-bed of tanner's bark. If the seeds are fresh, the plants will appear in about five or six weeks after the seeds are sown. As the plants will advance very fast, where due care is taken of them, they should have a large share of fresh air admitted to them in warm weather, otherwise they will draw up too weak. When the plants are about two inches high, they should be transplanted each into a separate small pot filled with light rich earth, and plunged again into the hot-bed of tanner's bark, being careful to shade them from the heat of the sun, until they have taken new root; after which time they must have free air admitted to them, by raising the glasses in proportion to the warmth of the season, and should be frequently, but gently, watered. When the plants have filled these small pots with their roots, they must be shaken out of them, and their roots trimmed, and then placed in larger pots, which should be filled with the like rich earth, and plunged again into the hot-bed, where they should remain till michaelmas, provided the plants have room, without touching the glasses, at which time they must be removed into the bark-stove, and plunged in the warmest part thereof: during the winter season they must be sparingly watered, for as the plants have succulent stalks, much moisture will rot them; they must also be kept very warm, otherwise they will not live in this country. In summer they must have a large share of fresh air in warm weather, but they must not be removed into the open air, for they are too tender to live abroad in the warmest part of the year in this country.

^a Jussieu gen.

^b Browne.

^c Long, jam. 3. 844.

^d Diff. alt. surin.

^e Hort. kew. from Mill. dict. vol. 2. 1739.

This plant is now pretty common in the English gardens, where there are collections of tender plants preserved, some of which are grown to the height of twelve or fourteen feet, and many of them have produced flowers, but there has not been any of their fruit produced as yet in England.

As these plants have ample leaves, which are of a beautiful green colour, they afford an agreeable variety among other tender exotic plants in the stove; for where they are kept warm, and duly refreshed with water, they retain their leaves all the year in verdure.

[It is much cultivated in Jamaica, for its beauty, and the fine shade it yields. It loves a deep rich soil, and thrives best near water^f.

HYACINTHO-AFFINIS. See *Agapanthus* & *Hæmanthus*.]

HYACINTHUS (of Pliny. *Υακινθος* of Theophrastus and Dioscorides. Fabled to have sprung from the blood of Hyacinthus, when he was accidentally slain by Apollo with a quoit; or from that of Ajax. Derived by some from a violet and Cynthius one of the names of Apollo: if so, it should be written *Hiacinthus*.)

Lin. gen. n. 427. Reich. 461. Schreb. 577. Tourn. 180. Gært. 12. Juss. 52.

Muscari. Tournef. 180.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Lilia* Roy. or *Liliaceæ*.—*Coronariæ*, Lin. —*Asphodeli*, Juss.

GENERIC CHARACTER.

CAL. none.

COR. monopetalous, campanulate: border six-cleft, reflex.—*Nectary*, three honied pores, at the tip of the germ.

STAM. Filaments six, awl-shaped, shorter. Anthers converging.

PIST. Germ superior, round-three-cornered, three-furrowed. Style simple, shorter than the corolla. Stigma obtuse.

PER. Capsule roundish, three-sided, three-celled, three-valved.

SEEDS in pairs (generally), roundish.

OBS. This natural genus has been divided into others not natural, as

1. *Hyacinthus* Tournef. when the tube of the corolla is oblong.
2. *Muscari* T. when it is almost globular. Some species have the corolla six-parted; in one it is funnel-shaped.

It has the germination of *Asphodelus*. Juss.

ESSENTIAL CHARACTER.

Cor. bell-shaped, with three honied pores by the germ.

SPECIES.

1. *Hyacinthus non scriptus*. Common *Hyacinth* or *Harebells*.

Lin. spec. 453. Reich. 2. 76. hort. cliff. 125. Hudsf. angl. 141. Wither. arr. ed. 2. 356. ed. 3. 343. Lightf. scot. 182. Curt. lond. 2. 18. 139. Relb. cant. n. 263. Hall. belv. n. 1248. Neck. gallob. 167. Blackw. t. 61. Dod. cer. 172.

H. oblongo flore cæruleus major. Baub. pin. 43.

H. anglicus. Ger. 99. 1. emac. 111. 1, 2. Raii hist. 1159. syn. 373.—f. belgicus. Baub. hist. 2. 586.

—belgicus vel hispanicus. Park. parad. 125. 5.

Corollas tubular, bell-shaped, six-parted, segments rolled back, bractes in pairs.

2. *Hyacinthus cernuus*. Bending *Hyacinth*.

Lin. spec. 453. syst. 335. Reich. 2. 77.

H. hispanicus. Clus. hist. 1. 177. Raii hist. 1160.

H. oblongo flore suaviter rubente, minor. Baub. pin. 44?

Corollas bell-shaped (swelling at the base) six-parted, raceme drooping.

3. *Hyacinthus ferotinus*. Late-flowering *Hyacinth*.

Lin. spec. 453. Reich. 2. 77. Gært. fruct. 1. 38. Cavan. hisp. 18. n. 28. t. 30.

H. obsoleto flore. Baub. pin. 44.—hispanicus major. Ger. emac. 115. f. 14.

H. obsol. coloris, hispanicus ferotinus. Clus. hist. 1. 177, 178.—hisp. obsoletus. Park. parad. 122. t. 125. f. 3. Raii hist. 1160.

^f Long.

H. ferot. maximus. Best. syst. vern. 2. t. 16. f. 1.

Outer petals almost distinct, inner coadunate.

- [4. *Hyacinthus viridis*.

Lin. spec. 454. syst. 335. Reich. 2. 77. Murr. comm. gott. 1781. p. 44. t. 5.

The outermost segments of the corollas awl-shaped and very long.]

5. *Hyacinthus amethystinus*. Amethyst-coloured *Hyacinth*.

Lin. spec. 454. Reich. 2. 78. hort. upf. 85. Pallas it. 3. 589.

H. oblongo cæruleo flore, minor. Baub. pin. 44. Rudb. elyf. 2. 27. f. 8.

H. minor hispanicus. Ger. emac. 115. f. 15.—angustifolius. Baub. hist. 2. 587. Clus. cur. app. alt. Raii hist. 1160.

H. hisp. minor, Orientalis facie, flore cæruleo albo & rubente. Park. parad. 120. t. 125. f. 1.

Corollas bell-shaped, half-six-cleft, cylindrical at the base.

- [6. *Hyacinthus revolutus*. Wave-leaved *Hyacinth*.

Lin. syst. 335. suppl. 204. Thunb. prodr. cap. 64.

Corollas bell-shaped, six-parted, revolute, leaves oblong, waved.]

7. *Hyacinthus orientalis*. Garden *Hyacinth*.

Lin. spec. 454. Reich. 2. 78. hort. upf. 85. cliff. 125. Gron. orient. n. 115. Mill. fig. t. 148.

(fl. plenissimo).

H. orientalis 1—15 & plenus 1—3. Baub. pin. 44.

H. orient. major & major. Dod. pempt. 216.

H. orient. quibusdam. Constantinopolitanus. Baub. hist. 2. 575.—& brumalis f. præcox. Park. par. Raii hist. 1159. n. 18, 19.

H. orient. cæruleus & polyanthus. Ger. 100. f. 7, 8. emac. 112. f. 4, 5.—item 113. f. 6, 7, 8, 9. & 114. f. 10, 11.

H. orient. Park. parad. 118. n. 1—8. t. 121.—græcus. Lob. ic. 104.

Corollas funnel-form, half-six-cleft, swelling at the base, with two small bractes under each pedicel.

- [8. *Hyacinthus corymbosus*.

Lin. syst. 335. Reich. 2. 78. mant. 223. Thunb. prodr. cap. 64.

Corollas funnel-form, raceme erect, scape shorter than the leaves.

9. *Hyacinthus romanus*. Roman *Grape Hyacinth*.

Lin. syst. 335. Reich. 2. 78. mant. 224.

H. comosus albus belgicus. Baub. pin. 42.

H. com. alb. cum cæruleis staminibus. Baub. hist. 2. 584.

H. com. albus. Ger. 103. 2. emac. 117. 2. Park. parad. 115. n. 1. t. 117. f. 1. Raii hist. 1163.

Corollas bell-shaped, half-six-cleft, in racemes; stamens membranaceous.]

10. *Hyacinthus muscari*. Musk *Hyacinth*.

Lin. spec. 454. Reich. 2. 79. hort. cliff. 126. upf. 85.

H. racemosus moschatus. Baub. pin. 43. Raii hist. 1162.

H. botryoides major mosch. f. *Muscari* flore flavo & cineritio. Park. parad. 112. n. 1, 2. t. 113. f. 3, 4.

Muscari racemosus. Mill. dict. n. 3.

M. flavum & Clusii. Ger. 105. f. 1, 2. emac. 120. f. 1, 2.

Corollas ovate, all unequal, with one bracte under the pedicel, and another above it.

- [11. *Hyacinthus convallarioides*.

Lin. syst. 335. suppl. 204. Thunb. prodr. cap. 64.

Corollas bell-shaped, ovate, pendulous, scape filiform.]

12. *Hyacinthus monstrosus*. Feathered *Hyacinth*.

Lin. spec. 454. Reich. 2. 79. vir. cliff. 28.

H. pennatus f. comosus ramosus elegantior. Park. parad. 116. n. 5. t. 117. f. 5. Raii hist. 1163. 34.

Ger. emac. 117. f. 5.

Muscari monstrosus. Mill. dict. n. 4.

β. H. floribus paniculatis monstrosis. Linn. hort. cliff. 126.

H. panicula cærulea. Baub. pin. 42.

H. fannesius pan. comosa. Col. ecphr. 2. 10. t. 12.

H. com. ram. purpureus. Park. parad. 116. n. 4. t. 117. f. 4. Ger. emac. 118. n. 4. Raii hist. 1163. 35.

Corollas subovate.

13. *Hyacinthus comosus*. *Purple Grape Hyacinth*.

Lin. spec. 455. *syft.* 336. *Reich.* 2. 79. *mant.* 366.
Hall. herb. n. 1247. *Scop. carn. n.* 423. *Pollich*
pal. n. 342. *Jacqu. austr.* 2. t. 126. *Krock.*
filef. n. 537. *Villars dauph.* 2. 263. *Curt.*
magaz. 133.

H. com. major purpureus. *Baub. pin.* 42.

Hyacinthus. Camer. epit. 798.—*comosus.* *Ger.* 103.

f. 1. emac. 117. *f. 1. Raii hist.* 1162.—*major*
purpureus. *Baub. pin.* 42. *Park. parad.* 116.
n. 3. t. 117. f. 3.—com. spurius tertius. *Dod. pempt.*
 218.—*maximus botryoides cæruleus.* *Baub. hist.*

2. 371.

Muscari comosus. *Mill. dict. n.* 2.

Corollas angular-cylindrical, the upper ones barren on
longer pedicels, bractes small, acuminate.

14. *Hyacinthus botryoides*. *Blue Grape Hyacinth*.

Lin. spec. 455. *syft.* 336. *Reich.* 2. 80. *mant.* 366.
hort. cliff. 126. *ups.* 85. *Hall. herb. n.* 1246.
Scop. carn. n. 424. *Curt. magaz.* 157.

H. racemosus cæruleus major. *Baub. pin.* 42.

H. botryoides vernus minor latifolius cæruleus inodo-
rus. *Baub. hist.* 2. 572. *Raii hist.* 1161.—*purpu-*
reus 3. Clus. hist. 1. 181.—*cæruleus major.* *Ger.*
 103. *f. 4. emac.* 119. *f. 8.—cæf. amoenus.* *Lob.*
ic. 108. *Park. parad.* 114. *t. 113. f. 5.*

Muscari botryoides. *Mill. dict. n.* 1.

Corollas glöbular, uniform, leaves channelled-cylindrical,
strict.

15. *Hyacinthus racemosus*. *Clustered Grape Hyacinth*.

Lin. spec. 455. *syft.* 336. *Reich.* 2. 80. *mant.* 367.
Retz. obs. 3. 17. *Hall. herb. n.* 1245. *Jacqu.*
austr. 2. t. 187. *Krock. filef. n.* 538. *Villars*
dauph. 2. 264. *Curt. magaz.* 122. *Dod. pempt.*
 217.—*cæruleus minor juncifolius.* *Baub. pin.* 43.

H. botryoides 1. Clus. hist. 1. 181.—*cæruleus.* *Ger.*
 103. *f. 3. emac.* 118. 6.—*minor cærul. obscurus.*
Park. parad. 114. *Raii hist.* 1161.—*vernus minor*
cæruleus angustioribus foliis odoratus. *Baub. hist.*
 2. 571.

H. comosus minor, Bulbine Plinii. *Dalech.* 1511.

M. arvense juncifolium cæruleum minus. *Tourn. inst.*
 348. *Garid. aix.* 319. *Ger. prov.* 156.

Corollas ovate, the upper ones sessile, bractes solitary, very
short, leaves loose.

[16. *Hyacinthus brevifolius*.

Thunb. prodr. cap. 63.

Corollas six-parted, raceme drooping, leaves shorter than
the scape.

17. *Hyacinthus flexuosus*.

Thunb. prodr. cap. 64.

Corollas bell-shaped, raceme upright, leaves linear, longer
than the scape.

DESCRIPTIONS.

i. Root a roundish bulb, the size of a nutmeg.
 Scape from six inches to a foot in height, upright,
 round, smooth and solid, bowed down when it begins
 to flower. Leaves four, six, or sometimes more, only
 half the length of the scape, and about half an inch
 broad, keeled, hollow, smooth, shining, grass green,
 flaccid, bending downwards, ending in an acute point.
 Flowers in a long raceme or spike, from eight to
 twelve, often more, all pointing one way, pedicelled,
 pendulous, sweet-smelling, of a blue or violet colour,
 varying to white and flesh-coloured, six-parted to the
 very base. Bractes two to each flower, lanceolate or
 awl-shaped, and nearly upright. This part was little
 observed before the time of Linneus; Ray, however,
 remarks it here, and calls it *ligula*: he says there are
 two to each flower, of a violet colour, longer than the
 pedicel, one larger than the other. Filaments adher-
 ing to the segments of the corolla, every other of them
 almost to the anthers; the three longest are equal to
 the tube of the corolla. Anthers upright, incumbent,
 somewhat arrow-shaped. Germ conical, whitish. Style
 at top of a blueish colour. Stigma villose, moistened
 with a drop of liquor, according to Linneus, and hav-
 ing club-shaped glands, according to De Necker.
 The honied pores, which Linneus gives as the essential
 character of the genus, are not discoverable in this
 species. The valves of the capsule are ovate, and

terminate in a short point. Seeds numerous, of a fine
 blue colour, with a polished surface^a.

The absence of the nectariferous pores, the very
 deep divisions of the corolla, almost forming six dis-
 tinct petals, and the structure of the other parts of the
 fructification induce Dr. Withering to wish that Lin-
 neus had arranged this plant under the genus *Scilla*.
 The corolla shrivelling and not falling off, and the
 ends of the petals being rolled back, seem to consti-
 tute the only observable differences. Dr. Stokes also
 thinks it has more of the habit and even structure of
Scilla than of *Hyacinthus*. The drooping of the
 flowers distinguishes it from *Scilla campanulata*, a plant
 often found in our gardens, and flowering at the same
 time^b.

Native of France, Flanders, Switzerland, Italy,
 Spain, Persia. It adorns our woods, coppices, and
 hedge-rows with its flowers in the spring months. Mr.
 Curtis remarks that the seeds are not ripened till the
 end of the year; and, that on being sown, they did
 not vegetate till the second year.

The fanciful term of *non scriptus* was applied to
 this plant by Dodonæus, because it has not the A, A,
 on the petals, and therefore is not the *Hyacinthus poe-*
ticus. Our old botanists name it *Anglicus* and English
Hyacinth from its extreme commonness in many parts
 of our Island. Gerarde calls it *blew Harebels* or En-
 glish *Jacint*; and it is the *azur'd Harebell* of our
 Poet, in his *Cymbeline*^c. In French it is *Jacinte des*
bois; and in German, *Niederlandische*, or *Englische*
Hyacinthe.

Dr. Withering says that the fresh roots are poisonous.
 According to Gerarde, they are “full of a slimy
 “glewish juice, which will serve to set feathers upon
 “arrowes in steed of glew, or to paste bookes with:
 “whereof is made the best stanche, next unto that of
 “Wake robin rootes.”

English *Hyacinth* with blue flowers is very abun-
 dant in many places. Carnation and white are not so
 common. Gerarde found them by Colchester in Essex,
 by Southfleet near Gravesend, and near Canterbury in
 Kent, about Bath in Somersetshire, and Warrington
 in Lancashire: With white flowers it was also remarked
 by Ray in Scadbury park, Kent; and by Dr. Stokes
 near Worcester. In the inclosures about Streatham
 and other places in Surry.

2. This agrees with the first sort in habit and ap-
 pearance, but it is smaller, and differs in having the
 leaves more linear or less lanceolate, and more erect;
 the raceme is more nodding; the corollas flesh-co-
 loured, not blue, rounder, with the sides of the petals
 less spreading, flat at the base, not marked with a
 raised line on the back, and less rolled back (though
 still reflex) than in that. The pistil is shorter than
 the stamens: and the two bractes are of a deeper car-
 nation^d. The corolla swells out at the base in this,
 which it does not by any means in the preceding^e.

Native of Spain. Cultivated in 1759, by Mr.
 Miller^f; who looks upon it as a variety of the first,
 differing principally in having the flowers of a blush
 peach colour. Ray also observes that it is not very
 unlike the preceding, and that Caspar Bauhin did not
 separate them. Parkinson makes them one, under
 the title of English Hares-bels, or Spanish *Jacint*.

Mr. Miller's third sort, which he absurdly calls *H.*
utrinque floribus, seems to be a variety of this. He
 says] it has blue flowers, disposed on every side the
 stalk, which rises about nine inches high, that the thyrses
 of flowers is large when the roots are strong, that it
 is a native of Spain and Italy, and that it was formerly
 preserved in gardens, but having been neglected for
 the fine varieties of the Eastern *Hyacinths*, it is now
 seldom seen but in old gardens. [This is the case
 with many of our old favourites, which are cast out
 daily to make room for new comers, inasmuch that
 many of the plants which were most known in the
 time of Caspar Bauhin are now strangers to us.

^a Curt. lond. Ray hist. With. Stokes, Relh.

^b Curtis & Stokes.

^c Act 4. scene 5.

^d Linn. spec.

^e Linn. syft.

^f Hort. kew.

3. Bulb ovate-conical, solid, covered with brown skins. Scape single, a foot high, smooth. Leaves channelled, sheathing the scape at the base, shorter than the scape, sharp at the end. Flowers in a raceme, all pointing the same way, drooping a little; each on a short peduncle, with an awl-shaped bracte at the base. Corolla of a dull greenish red colour^g.] When the flowers first appear, of a light blue, but fading to a worn out purple colour, according to Miller. [In Gerarde they are described as of a very dusky colour, as it were mixt with purple yellow and green, and as having no smell. In Parkinson, who calls it Spanish dunne-coloured Jacinth, as of a purplish yellow colour, with some white and green as it were mixed among it. Ray observes, that plants which he raised from seed of the same root, varied in the colour of their flowers, some being dusky, and others almost green.

They are tubular at the base; the three outer segments ovate-linear, separated almost to the bottom, and recurved, the three inner united into a tube, spreading a little at top. Filaments inserted into the base of the corolla^h. Capsule globular-three-cornered, produced at the base into a short, conical peduncle, of a leathery-crustaceous substance, opening only at top. Seeds about ten in each cell, suborbiculate, bracted, flat on both sides, surrounded with a retuse rim, very dark coloured, and shining a littleⁱ.

Native of Spain near Aranjuez, and of Barbary, about Fez and Morocco. Parkinson says the African plant is in all respects greater than the Spanish.

With us it flowers in june, and from its flowering later than the other Hyacinths had the name of *serotinus* given it by Clusius. Mr. Miller says it flowers early in the spring, which must be a mistake with respect to England; though in Spain Cavanilles affirms that he has found it in flower on the 20th of april.

Mr. Miller cultivated it in 1759^k.

4. This is of the same stature with the next species, but the corolla is green, with the three outer segments, which are placed alternately with the three inner, double their length, and ending in a very narrow point. Native of the Cape^l.]

5. This has a smaller flower; the petals are cut half their length, and are reflex at the brim; the lower part is cylindrical, a little swelling at the base, and of a deeper blue.

[The root, according to Clusius, is the size of a small olive, covered with a brown skin. Leaves five or six, longer and narrower than in the first sort, striated and keeled, lying mostly on the ground. Scape slender, a long span in height, round, smooth, glaucous, having six or seven flowers at top (Ray says, sometimes twelve or more), nodding on pedicels half an inch in length; they are bright blue, smaller than those of the first sort, without any scent. Most of them, says Parkinson, have white stripes and edges; and they vary to pure white, and a fine delayed (pale) red colour, with deeper-coloured veins running along the three outer segments.] Mr. Miller says, it was formerly called Coventry blue Hyacinth by the gardeners.

Native of Spain, [Italy and Russia.—Flowering in april and may. Cultivated by Mr. Miller in 1759^m.

6. This is one of the species found at the Cape of Good Hope by Thunberg, with several others, of which we have no descriptions. See n. 11, 16, 17, 18.

7. The Garden or Oriental Hyacinth has a large coated bulb, viscid, and of a sweetish taste, from the bottom of which spring the roots, which are long, round fibres, of a middling thickness; from the middle of it a single naked stem or scape; and from the top six, seven or more leaves. The leaves are broadish, keeled, pale green at bottom, but of a darker green towards the end. The scape is a long span in height, smooth, roundish, pale green below, but tinged with brown towards the top: from the middle of this to the top come out the flowers one above another, not pointing the same way, as in the Harebell, but standing

on different sides of the stalk; three, four, or five, to twelve or more in number, each nodding on pedicels, half an inch in length, usually of a very dark green colour, and having a pair of small bractes at the base; the corolla is near an inch in length, almost cylindrical except at the base, where it swells or bellies out, and at the top the segments are turned back a little. These flowers have a very sweet smell, and are much valued for the variety of their colours, as pure white, white tinged with blue, all shades of blue from these to the dark violet, and all shades of red purple from the faint blush to the deep red; they are also sometimes yellow. Culture and great attention have also brought the plants to be very strong, and the flowers to be very large and double.

The Garden Hyacinth is a native of the Levant. It is very abundant about Aleppo and Bagdat, where it flowers in februaryⁿ. Lepechin found it not only with purple, but with yellow flowers in Russia^o. With us it flowers in march and april; and was cultivated by Gerarde in 1596^p. Probably earlier; since neither he nor Parkinson speak of the Hyacinth as a flower then new in cultivation.

Gerarde figures only two varieties, the blue single, and what he calls the double, but which is only many-flowered, and also blue or sky-coloured; but he mentions also the purple and the white.

Parkinson, in 1629, has eight Oriental Hyacinths.

1. The White winter Orientall Jacinth.
2. The Purple ditto.
3. The greatest or Zumbul.
4. The ordinary (common) Orientall Jacinth, of different colours and shades.
5. The bushy stalked Orientall Jacinth.

And three Double ones, viz.

6. The bleake Orientall Jacinth, once double. Green at first, but of a blueish white when open, retaining some shew of greenness, with the brims of the petals white.
7. The fair (handsome) double blue, or purple.
8. The pure white double.

Johnson, in his edition of Gerarde's herbal, 1633, has ten, viz.

1. Blue Orientall Jacinth: figured in f. 4. both in flower and seed.
2. Many-flowered. f. 5.—blue.
3. The other many-flowered, white. f. 6.
4. Reddish purple. f. 7.
5. White. f. 8.
6. Winter Jacinth. f. 9.
7. Leafy-stalked. f. 10.

And three Double ones, viz.

8. Greenish-flowered.
9. Blue.
10. Milk White.—Only one of these is figured f. 11.

Parkinson and Johnson had these three double flowers from Clusius's *Curæ posteriores*, and Besler's *Hortus Eystettensis*, in which latter work they are figured: and they were all that were then known.

I do not find more than these enumerated in Rea's *Complete Florilege*, published in 1702. And Mr. Miller says that] we formerly had no other varieties in the English gardens, but the single and double white and blue flowering; that from the seeds of these there were a few others raised in England, and also by the Flemish gardeners, who came over annually with their flower-roots to vend in England; but that the gardeners in Holland have within the last fifty years raised so many fine varieties, as to render the former of little or no value.

Double flowers seem not to have been in much esteem, long after the Hyacinth had attracted the notice of the florists. For though Swertius in his *Florilegium*, printed in 1620, has figured about forty varieties of this flower, yet he has not one that is double. And Peter, the grandfather of the present George Voorhelm of Haarlem, cultivated the Hyacinth a con-

^g Cavanilles.

^k Hort. kew.

^h Ibid.

^l Linn. spec.

ⁱ Gartner.

^m Hort. kew.

ⁿ Gron. orient.

^o Reich. in syst.

^p Hort. kew.

siderable time, before he attached himself to double flowers. The beauty of this celebrated flower was then supposed to consist in the regularity and equality of the petals, and the uniformity of the colours. The double Hyacinth was in no more esteem then, than the double Tulip is now; and Peter Voorhelm was accustomed to throw them out of his collection, till having been ill, and not able to visit his flowers till they were going off, there remained by accident a bulb with double flowers, which fixed his attention, not for any superior excellence it possessed, for it was small, and of no remarkable beauty, but probably because it was alone. He cultivated it, however, and increased it by offsets. Florists appeared who were fond of it, and gave him a good price for it. This must have been probably towards the end of the last century. He then set himself to cultivate Hyacinths with double flowers with as much zeal as he had shewn before in casting them out. The first double flower he raised was named *Mary*; this variety is lost, as well as the two next that were produced. *The King of Great Britain*, which is now looked upon as the oldest double Hyacinth, appeared about the beginning of the present century; it was greatly preferred to all the flowers then known, and the price of it was considerably more than 1000 florins. From this time the greatest attention has been paid at Haarlem to the raising and culture of this beautiful flower: and such has been the rage for it, that from one to two thousand Dutch florins have been given for a single root; that is, from near one to two hundred pounds sterling.

The Haerlem gardeners distinguish near 2000 Hyacinths by name, and generally publish catalogues of them from year to year. New varieties are annually produced, and whole acres together are covered with this flower in the circuit of that town alone⁹.

They are distributed into classes from their colours; the principal of which are blue, red, purple and white, with some yellow; they are subdivided from the shades of each colour, as of the blues deep blue, violet blue, blue purple, porcelain blue, agate blue, sky blue, french gray, &c.; of the reds deep or full red, rose-coloured, carnation, &c.: also from the mixtures of different colours or shades, as light blue with a deep blue or purple eye; light red with a deep red eye; white, with a rose-coloured, blue, purple or yellow eye, white and red of different shades, and blue, violet or purple of different shades mixed; yellow with a purple eye, &c. Some also have their petals striped with a paler or deeper colour: and all these varieties are found both in single and double flowers; but the latter only are now much regarded among florists, unless it be for producing seeds, by which alone they can procure new varieties.

The principal properties of a fine double Hyacinth are the following.

1. The stalk should be tall, strong and upright. The flowers, or bells as the florists call them, should be sufficiently numerous, each suspended by a short strong peduncle, in a horizontal position; the whole having a compact pyramidal form, with the crown or uppermost flower perfectly erect.

2. The flowers should be large, and well filled with broad bold petals, appearing to the eye rather convex, than flat or hollow: they should extend to about the middle of the scape or stalk.

3. The plain colours should be clear and bright, and strong are in general preferred to pale colours; such as are mixed should blend with elegance.

4. Leaves linear, very narrow, commonly three, shorter than a finger's length. Scape very short, terminated by a corymb of purple flowers, cloven half way down. Three stamens the length of the corolla, and the other three half the length. Style the length of the corolla. Native of the Cape of Good Hope, in pastures. Observed by Koenig¹⁰.

5. Leaves very long, the width of the finger. Raceme long, round, with very numerous flowers. Pedicels the length of the flowers. Bractes minute, mem-

branaceous, awnless. Flowers white, cut beyond the middle. Filaments broad-lanceolate, opposite to the segments of the corolla. Anthers blue¹¹.

Native of Italy. Observed by Capeller in gardens and fields about Rome.—Introduced in 1786, by Mr. John Græfer. It flowers here in may¹².]

10. The tenth sort has pretty large, oval, bulbous roots, from which arise several leaves, which are about eight or nine inches long, and half an inch broad; they are incurved a little on their sides, and end in obtuse points; these embrace each other at their base; out of the middle of these, the stalk which sustains the flowers arises; it is naked below, but the upper parts are garnished with small flowers growing in a spike; these have ovate pitcher-shaped petals, which are reflexed at their brim, and are of an ash-coloured purple, or obsolete colour, seeming as if faded, but have an agreeable musky scent: these stalks do not rise more than six inches high, so the flowers make no great appearance; but where they are in some quantity, they will perfume the air to a considerable distance. This sort flowers in april, and the seeds ripen in july.

Of this there are two varieties, one of which has the same coloured flowers with this here enumerated, on the lower part of the spike, but they are larger, and have more of the purple cast, but the flowers on the upper part of the spike are yellow, and have a very grateful odour. The Dutch gardeners title it *Tibcadi Muscari*. As this is supposed to be only a feminal variety of the third, I have not enumerated it as distinct. There is another variety of this with very large yellow flowers, that has been raised from seeds in Holland, which the florists there sell for a guinea a root.

[It is a native of the Levant; Linneus says beyond the Bosphorus, whence it was brought into Europe before 1554. It was cultivated here in 1597, according to Gerarde¹³.

11. Flowers without leaves, yellow. Found at the Cape of Good Hope by Thunberg¹⁴.]

12. The twelfth sort has a large bulbous root, from which come out several plain leaves a foot long, and about half an inch broad at their base; they are smooth, and end in obtuse points. The flower-stalks rise near a foot and a half high; they are naked at the bottom for about seven or eight inches, above which the panicles of flowers begin, and terminate the stalks. The flowers stand upon peduncles which are more than an inch long, each sustaining three, four, or five flowers, whose petals are cut into slender filaments like hairs; they are of a purplish blue colour, and having neither stamina nor germ, never produce seeds. It flowers in may, and, after the flowers are past, the stalks and leaves decay to the root, and new ones arise the following spring.

[Native of the South of Europe. Linneus suspects it to be a variety of the next species. It was cultivated here in 1629, according to Parkinson¹⁵.]

13. Bulb as large as a middling onion, [ovate, solid and white, covered with a purplish skin.] Leaves five or six, a foot (or eighteen inches) long, and three quarters of an inch broad at the base, diminishing gradually to a blunt point; [linear, channelled, bright green.] The flower-stalk rises about a foot (or eighteen inches) in height, [round, upright, smooth, glaucous green.] The lower half is naked, but the upper part [has a loose raceme of flowers, frequently for a foot in length. The lower flowers are farther asunder, before they flower they are upright, but whilst they flower, and afterwards, they stand out horizontally, on pedicels half an inch in length; their colour is a yellowish green, with blue or purple at the end; these are fertile. The upper ones are smaller, barren, stand upright, form a corymb, and are blue or violet, as are also their long pedicels¹⁶. Parkinson says, "the whole "stalke with the flowers upon it, doth somewhat resemble a long purse tassel, and thereupon divers "gentlewomen have so named it."

⁹ Linn. mant.

¹⁰ Hort. kew.

¹¹ Ibid.

¹² Linn. suppl.

¹³ Hort. kew.

¹⁴ Pollith, Krock, Linn. mant.

¹⁵ Des Jacintes; Amst. 1768. par le Marquis de St. Simon.

¹⁶ Linn. mant.

Native of the South of Europe, in corn fields.] Mr. Miller says he had both roots and seeds from Spain and Portugal. [John Bauhin and Ray both observed it near Geneva; and I found it at Chatelaine near that city in flower on the 21st of April, 1779.] It flowers with us the end of April and beginning of May. It varies with white and with blue flowers, but the purple is most common.

Gerarde, who cultivated it in 1596, calls it *Faire-haired Iacint*; Parkinson, *Great purple Faire-haired Iacint*; and Mr. Curtis, *Two-coloured or Tassel Hyacinth*. It is distinguished more by its singularity than its beauty, and by the difference between the lower and the upper barren flowers.]

14. This sort grows naturally in the vineyards and arable fields in France, Italy, and Germany, and where it is once planted in a garden, it is not easily rooted out, for the roots multiply greatly, and if they are permitted to scatter their seeds, the ground will be filled with the roots. There are three varieties of this, one with blue, another with white, and a third with Ash-coloured flowers: the first has a small, round, bulbous root, from which come out many leaves about six inches long, which are narrow, and their edges are incurved, so as to be shaped like a gutter: between these arises the flower-stalk, which has a close spike of blue fertile flowers at the top: they smell like new starch, or the stones of plums when fresh.

[Mr. Miller probably intends by this the next species, with which it is frequently confounded.]

The leaves are three lines wide, straight on account of their short petioles. The spike has from twenty to thirty flowers. The teeth of the corolla are white, and the uppermost are small^a.

According to Scopoli, it has the appearance of *Anthericum autumnale*, the leaves rolled into a cylinder, the raceme (or spike) an inch long, the flowers nodding, sweet-smelling, scarcely longer than their proper pedicels.

It differs from the next species, in having the leaves upright, the bunch of flowers smaller, the flowers themselves larger, rounder, of a paler and brighter blue.

Parkinson enumerates three varieties, the white, the blush-coloured and the branched; the first is frequently imported with other bulbs from Holland; the last seems to be a curious variety, and was obtained, according to Clusius, from the white^b. The grape Hyacinth was cultivated by Gerarde in 1596^c. He calls it *Great Grape-flower*. Parkinson, *Skie-coloured Grape-flower*. It is now seldom met with but in long-established gardens.

15. Bulb small. Leaves keeled, very narrow, a line or little more in breadth, cylindrical, on account of the weakness of their petioles loose and decumbent, rolled round and twisted in a variety of ways. Scape a span high, blue under the flowers, compressed at top, terminated by a close globular spike or raceme of from forty to fifty flowers, of a very dark blue, with a three-cornered white mouth; they are imbricated downwards, have very short peduncles, a sweetish smell, somewhat like new starch, or plums, or *Iris graminea*, and have generally a single very short bract at the base of each; the upper ones are barren^d. They sometimes vary to white, according to Haller.

Native of the South of Europe, in corn fields. I gathered it in flower near Geneva, April the 8th, 1779. It was cultivated by Gerarde in 1596^e. He calls it *Blew Grape-flower*; and Parkinson, *darke blew Grape-flower*. Mr. Curtis names it *Starch Hyacinth*. This is much more common in our gardens than the *botryoides*, and flowers in April and May^f.

Mr. Miller's *racemosus* seems to be the *Muscari*; and his *botryoides* this species.

16, 17. Found at the Cape of Good Hope by Chevalier Thunberg, along with the *revolutus*, n. 6. *corymbosus*, n. 8. and *convallarioides*, n. 11.]

^a Linn. mant. ^b Curtis. ^c Hort. kew.

^d Linn. mant. Retz. Krock. Villars.

^e Hort. kew.

^f Curtis.

PROPAGATION AND CULTURE.

1. The first sort, being common in many parts of England, is seldom admitted into gardens:

2. The second also is in very few gardens.

3, 5. The case is the same with the third and fifth sorts. Since so many fine flowers have been raised from the seeds of the Eastern Hyacinth, these have been almost totally neglected.

Such as are desirous to preserve them need not be at much trouble about it, for their roots propagate in great plenty in any soil or situation, and require no other care, but to take up their roots every second or third year, soon after their leaves decay, and to plant them again in autumn: for if they are permitted to remain longer in the ground, their roots will multiply to such a degree, as to render their flowers very small and weak. They may all be increased either by seeds, or offsets from the old bulbs; the latter method only is practised with the above sorts.

The Garden or Eastern Hyacinth.

The Eastern Hyacinth is propagated by seeds or offsets from the old bulbs; the former method has been but little practised in England till lately, but in Holland and Flanders it has been followed for many years, whereby they have obtained a very great variety of the most beautiful flowers of this sort: and it is owing to the industry of the florists in those countries, that the lovers of gardening are so agreeably entertained, not only with the curious variety of this, but of most other bulbous rooted flowers.

The method of raising these flowers from seed is as follows: having provided yourself with some good seed (which should be saved from either semi-double, or such single flowers as are large, and have good properties) you must have a parcel of square shallow boxes or pots, with holes in their bottoms to let off moisture, which must be filled with fresh light sandy soil, laying the surface very level; then sow your seeds thereon as equally as possible, covering them about half an inch thick with the same light earth; the time for this work is about the middle or latter end of August. These boxes, or pots, should be placed where they may enjoy the morning sun only until the latter end of September, at which time they should be removed into a warmer situation, and towards the end of October they should be placed under a common hot-bed frame, where they may remain during the winter and spring months, that they may be protected from hard frosts: though they should be exposed to the open air when the weather is mild, by taking off the glasses. In the latter end of February or the beginning of March, the young plants will begin to appear above ground, at which time they must be carefully screened from frosts, otherwise they will be soon destroyed when they are so young; but you must never cover them at that season but in the night, or in very bad weather; for when the plants are come up, if they are close covered, they will draw up very tall and slender, and thereby prevent the growth of their roots. About the middle of April, if the weather proves good, you may remove the boxes out of the frame, placing them in a warm situation, observing, if the season be dry, to refresh them now and then gently with a little water, as also to keep them very clear from weeds, which would soon overspread the tender plants, and destroy them, if permitted to remain.

Towards the beginning of May these boxes should be removed into a cooler situation; for the heat of the sun at that season would be too great for these tender plants, causing their blades to decay much sooner than they would naturally do, if they were screened from its violence. In this shady situation they should remain during the heat of summer, observing to keep them constantly clear from weeds; but you must not place them under the dripping of trees, &c. nor should you give them any water after their blades are decayed, for that would infallibly rot the roots. About the latter end of August you should sift a little light rich earth over the surface of the boxes, and then remove them again into a warmer situation, and treat them, during the winter, spring, and summer months, as was before

directed: and about the middle of august following you should prepare a bed of light rich sandy soil, in proportion to the quantity of your seedling plants; and having levelled the surface very even, you should take the earth from the boxes in which your plants were raised, into a sieve, in order to get out all the roots, which by this time, (if they have grown well) will be about the thickness of a small quill; these roots should be placed upon the bed at about two or three inches asunder, observing to set the bottom part of their roots downwards; then cover them over two inches thick with the same light earth; but as it will be impossible to get all the small roots out of the earth in the boxes, you should spread the earth upon another bed equally, and cover it over with light earth; by which method you will not lose any of the roots, be they ever so small.

These beds must be arched over with hoops, and in very hard frosty weather they must be covered with mats, &c. to protect them from frost; and in the spring, when the green leaves are above ground, if the weather should be very dry, you must refresh them with water; but do this sparingly, for nothing is more injurious to these bulbs than too great quantities of moisture. During the summer season you must constantly keep the beds clear from weeds; but after the blades are decayed, you must never give them any water; and in autumn you should stir the surface of the bed with a very short hand-fork, being exceeding careful not to thrust it so deep as to touch the roots, which, if hurt, are very subject to perish soon after. Then sift a little fresh, light, rich earth over the bed about an inch thick, or somewhat more, and in winter cover them again (as was before directed.) In this bed the roots may continue two years, observing to treat them, both in summer and winter, as before; then the third year the roots should be carefully taken up a little before their leaves decay, laying the roots horizontally in the ground to ripen for three weeks, after which they may be kept out of the ground till the end of august, when they should be planted into new beds prepared as before, placing them at the distance of six inches asunder; in these beds the roots may remain till they flower, during which time they should be treated as before, with this difference only, that instead of covering them with mats in the winter, the surface of the ground should be covered with tanners bark.

When their flowers begin to shew themselves, you should mark all such as appear to have good properties, by thrusting a small stick down by each root; which roots, at the time for taking them up, should be selected from the rest, and planted by themselves; though I would by no means advise the rejecting any of the other roots, until they have blown two years, before which you cannot ascertain their value. When the green leaves of these plants begin to decay, their roots must be taken up, and a bed of light earth, in a shady situation, should be raised into a ridge; the better to shoot off the moisture, the roots should be laid into the earth again in an horizontal position, leaving the green leaves hanging out of the ground from the roots, whereby the great moisture contained in their very succulent leaves and flower-stalks may be exhaled, and prevented from returning to the roots, which, when suffered so to do, is very often the cause of their rotting after they are out of the ground. In this ridge the roots should remain until the leaves are quite dried off, when they must be taken up, and after being cleared of all manner of filth, which would be hurtful to them, they must be laid up in boxes, where they may preserved dry until september, which is the proper season for planting them again; the method of doing this shall be hereafter mentioned, when we treat of the management of old roots.

I shall now proceed to the culture of such Hyacinths as have either been obtained from Holland, or are of our own product from the seeds of such flowers as were very beautiful, and worthy to be preserved in collections of good flowers: and it has been the want of skill in the management of these noble flowers, which has occasioned the ill success most people have had

with them in England; whereby they have been neglected, supposing their roots to degenerate after they have flowered in England, which is a great mistake; for were the roots managed with the same art as has been practised in Holland, I am fully convinced they would thrive near as well in England as there, or elsewhere, as I have experienced; for from some hundreds of roots which I have received from Holland at two or three different times, I have had a very great increase of their roots, which were as large, and produced as many flowers upon their stems, as the same sorts generally do in Holland.

The soil in which these flowers succeed best, is a light, sandy, fresh, rich earth, which may be composed after the following manner: take half fresh earth from a common, or pasture land, which is chiefly of a sandy loam; this should be off the surface, and not taken above eight or nine inches deep at most; and if you take the turf, or green sward with it, it will still be better, provided you have time to let it rot before it is used; to this you should add a fourth part of sea-sand, and the other fourth part of rotten cow dung; mix these well together, and cast it into a heap, where it may remain until you use it, observing to turn it over once in three weeks or a month, that it may be well mixed. If this compost is made two years before it is used, it will be much the better; but if you are obliged to use it sooner, then it should be oftener turned, that the parts may the better unite.

This soil should be laid two feet deep on the beds which are designed for Hyacinths, and if you lay a little rotten cow dung, or tanners bark, at the bottom, which may be within reach of the fibres, but should by no means touch the bulb, it will be better. If the soil is very wet where these beds are made, you should raise them ten or twelve inches above the surface of the ground; but if it be dry, they need not be raised above three or four inches.

The manner of preparing the beds is as follows: First, take all the former old earth out of the bed to the depth you intend, which should be near three feet; then spread some rotten neats dung, or tan, in the bottom, about six inches thick, laying it very level; upon this you should lay the above-mentioned earth two feet thick, levelling it very even; then score out the distances for the roots, which should be eight inches square, in straight rows each way; after which, place your roots exactly in the squares, observing to set the bottom part downward; then cover the roots six inches deep with the same prepared earth, being very careful in doing this not to displace any of the roots; and if the tops of these beds are made a little rounding, to shoot off the wet, it will be of service in moist ground, provided the middle of the beds be not made too high, which is a fault the other way.

The best season for planting these roots is the middle or latter end of september, according to the earliness or lateness of the season, or the weather when it happens; but I would advise you never to plant them when the ground is extremely dry, unless there be a prospect of some rain soon after; for if the weather should continue dry for a considerable time after, the roots will receive a mouldiness, which will certainly destroy them. The beds will require no farther care until the frost comes on very severe, at which time they should have some rotten tan spread over them, about four inches thick; and if the alleys on each side of the bed are filled up, either with rotten tan, dung, or sand, it will prevent the frost from penetrating the ground on each side to the roots, and secure them from being destroyed; but when the winters prove very severe, it will also be proper to have some Peas-haulm, Straw, or such like covering laid over them, which will keep out the frost better than mats; and lying hollow, will admit the air to the surface of the ground, and also permit the exhalations to pass off, whereby the earth will remain dry, and prevent the roots from rotting, which has often happened when the beds have been too closely covered. But you must observe to take off this light covering whenever the weather is mild, and only let it continue on in very hard frosts; for where the beds are covered with tan or sea-coal ashes, no common

common frost can penetrate through, so the coverings are useless, except in very severe frost; for a small frost cannot injure the roots before the green leaves appear above ground, which is seldom before the beginning of february, at which time the beds must be arched over with hoops, that they may be covered either with mats, canvas, or some other light covering, to prevent the frost from injuring the buds as they arise above ground; but these coverings must be constantly taken off every day when the weather is mild, otherwise the flower-stems will be drawn up to a great height, and become very weak, and the foot-stalks of the flowers will be long and slender, and so rendered incapable of supporting the bells; which is a great disadvantage to the flowers, for one of their greatest beauties consists in the regular disposition of their bells. When these hoops are fixed over the beds, the rotten tan should be most of it taken off them; in doing of which, great care should be taken not to bruise or injure the leaves of the Hyacinths, which by that time will be breaking out of the ground with the flower-stem, therefore the tan should be removed by the hands; or if any instrument is made use of in the doing of it, there must be great caution how it is performed.

When the stems of the flowers are advanced to their height, before the flowers are expanded, you should place a short stick down by each root, to which, with a wire formed into a hoop, the stem of the flowers should be fastened, to support them from falling; otherwise, when the bells are fully expanded, their weight will incline them to the ground, especially if they are not screened from the wind and rain.

During their season of flowering they should be covered in the heat of the day from the sun, as also from all heavy rains; but they should be permitted to receive all gentle showers, as also the morning and evening sun; but if the nights are frosty, they must be constantly defended therefrom. With this management you may continue your Hyacinths in beauty at least one whole month, and sometimes more, according to their strength, or the favourableness of the season.

When their flowers are quite decayed, and the tops of their leaves begin to change their colour, you must carefully raise the roots out of the ground with a narrow spade, or some other handy instrument; this is what the Dutch gardeners term lifting of them: in the doing of this, the instrument must be carefully thrust down by the side of the root, being careful not to bruise or injure it, as also to put it below the bottom of the root; then by the forcing of this instrument on one side, the fibres of the root are raised and separated from the ground. The design of this is to prevent their receiving any more nourishment from the ground: for by imbibing too much moisture at this season, the roots frequently rot after they are taken up: about a fortnight after this operation the roots should be entirely taken out of the ground, and then carried to beds situated where the morning sun only shines upon them; the earth of the beds should be loose and raised into a sharp ridge, laying the roots into it in a horizontal position, with their leaves hanging out, by which means a great part of the moisture contained in their thick succulent stalks and leaves will evaporate; which, if it were permitted to return back to the roots, would cause them to rot and decay after they are taken up, which has been the general defect of most of the Hyacinths in England.

In this position the roots should remain until the green leaves are entirely decayed, which perhaps may be in three weeks time. This is what the Dutch gardeners term the ripening of their roots, because by this method the roots become firm, and the outer cover is smooth, and of a bright purple colour; whereas those roots which are permitted to remain undisturbed, till the leaves and stalks are quite decayed, will be large, spongy, and their outer coats will be of a pale colour; for the stems of many of these flowers are very large, and contain a great quantity of moisture, which, if suffered to return into the roots, will infallibly cause many of them to perish. After they are so ripened, you must take them out of the ground, and wipe them

clean with a soft woollen cloth; taking off all the decayed parts of the leaves and fibres; putting them into open boxes where they may lie singly, and be exposed to the air, but they must be preserved carefully from moisture; nor should they be suffered to remain where the sun may shine upon them; in this manner they may be preserved out of the ground until september, which is the season for planting them again, at which time you must separate all the strong flowering roots, planting them in beds by themselves, that they may make an equal appearance in their flowers; but the offsets and smaller roots should be planted in another separate bed for one year, in which time they will acquire strength, and by the year succeeding will be as strong as the older roots.

The single and semi-double flowers should be planted also in a bed by themselves, where they should be carefully sheltered (as was directed before) from the frost, until the flowers are blown; at which time their covering should be entirely removed, and they suffered to receive the open air, but the flower-stalks should be supported with sticks; which, though the weather may soon deface the beauty of the flowers, yet is absolutely necessary to promote their seeding; and when the seeds are quite ripe, you must cut off the vessels and preserve them, with the seeds therein, until the season for sowing it. But you must observe, that after these flowers have produced seeds, they seldom flower so well again, at least not in two years after; so that the best method to obtain good seeds is, to plant new roots every year for that purpose. Although these roots are, by most persons, taken up every year, yet if the beds are well prepared for them, they may remain two years in the ground unremoved, and the roots will increase more the second year than the first, though the flowers are more liable to degenerate: therefore those who cultivate these for sale, take up their roots annually when they are large and saleable; but the offsets and small roots, they usually leave two years in the ground.

There are some persons who let their Hyacinth roots remain three or four years unremoved, by which they have a much greater increase of roots, than when they are annually taken up; but the roots by this great increase are frequently degenerated, so as to produce single flowers; therefore I should advise the taking up of the roots every year, especially those of the most valuable kinds, which is the most certain method to preserve them in their greatest perfection, though the increase may not be so great; and if these roots are planted a fortnight or three weeks earlier in the autumn than is before directed, it will cause them to produce stronger flowers; and those roots which are annually removed, will be rounder and firmer than such as stand two years unremoved.

[Observe that if the bulbs of double Hyacinths be planted sooner than the middle of october, they will be apt to come up during the winter; and thus be injured by severe frosts; and if it be deferred later than the middle of november, the bulbs will begin to put out fibres, which will weaken them.

The beds should be in a dry airy part of the garden, with a southern exposure sheltered from the north and east, six feet distant at least from the fence, and made sloping a little towards the sun.

Florists differ as to the proportion of the materials of the compost in which the bulbs are to be planted. Some instead of half fresh earth, recommend only one third, with the same quantity of rough sea or river sand, and the remaining third part to be one fourth old rotten cow-dung, and the rest the earth of decayed leaves. Some put in tanner's bark, rotten wood or old sawdust. Others reprobate tan, as retaining an astringency which is pernicious to delicate bulbous flowers.

In using fresh earth from a pasture it is necessary to guard against the wire-worm, by minutely inspecting the heap as it is turned over, and picking out this destructive creature, which is of a yellow colour, and about an inch in length.

Persons who are nice about their flowers erect a covering or awning over them during the time of flowering, to keep off the rain without excluding the light, and to shelter them from cold winds, which are frequently

quently very injurious at the early season when these delicate flowers are in bloom. This awning should be of coarse linen on a frame of wood, made to roll up easily, that in mild cloudy weather the flowers may have the full benefit of the sun and air: and it should not continue on more than a fortnight or three weeks, for it weakens the bulbs.

Hyacinths never require any water; moderate rains are sufficient for them after planting and till they bloom; and when they have past their bloom heavy rains should be kept from the bulbs by hoops covered with mats.

Such bulbs as are four or five years old flower strongest in England; and after this gradually decline: but in Holland the same bulb will produce bloom twelve or thirteen years together, nor is it ever known to die merely from age.

The Hyacinth succeeds best in situations near the sea. In more inland parts the florist must introduce fresh bulbs annually to supply his deficiencies; and keep a reserve in narrow deep pots to fill up the vacancies in his beds.

Single Hyacinths may be planted a week or two sooner than the double ones, and thus will bloom two or three weeks earlier than the latter.

Upon these you must depend for seed, for the double ones rarely produce any. Save your seeds from those plants which have strong straight stems, and a regular well-formed pyramid of flowers, which are semi-double: and do not gather it till it is perfectly black, when the pericarp will appear yellow on the outside, and begin to open. Then cut off the stem, and place it in a dry, airy, cool place till the time of sowing; which is either the end of october or the beginning of march. (Mr. Miller recommends august.) By the sixth year after sowing, all the bulbs that survive will have produced their bloom, and if one in five hundred should deserve to be recorded in the annals of the Florist, the cultivator may esteem himself fortunate.]

The Grape-Hyacinths or Muscari.

These are hardy, will thrive in the open air, and require no other culture but to take up the roots every second or third year, to separate the bulbs; for some of them multiply fast, and when the bunches of bulbs become large, they do not flower so strong. They should be taken up soon after their stalks and leaves decay, and spread on a mat in a dry shady room for a fortnight, to dry, after which they may be kept in boxes till Michaelmas, when they may be planted in the borders of the flower-garden, and treated in the same way as the common Hyacinths.

They are all easily increased by offsets, which most of them send out in plenty; so that there is no occasion to sow the seeds, unless it be to gain new varieties.

[The botryoides and racemosus, which are very much alike, being troublesome from their great increase, and the former not flowering readily in an open border, it is a good method to plant the bulbs in moderately sized pots, filled with light earth, and to plunge them in the borders to flower: in the autumn they should be taken out, and the offsets thrown away. The latter is much the most common in our gardens, and is frequently mistaken for the botryoides².

HYACINTHUS. See *Agapanthus*, *Aletris*, *Antholiza*, *Pollanthes*, *Scilla*.

lanatus. See *Lanaria*.

HYBANTHUS. See *Viola*.

HYDNORA. See *Aphyteia*.

HYDNUM. (*ῥῥῖα* of *Dioscorides*. *Οἰδῖον tuber*, in *Theophrastus*, from *οἰδῖον tumeo*; written *οἰδῖον* in *Plutarch*, *symp.* 4.)

Lin. gen. Schreb. n. 1676.

Erinaceus. *Dill. Mich.* 72.

Class. 24. 5. *Cryptogamia Fungi.*

GENERIC CHARACTER.

A horizontal Fungus, echinated beneath with awl-shaped fibres.

Obs. *These awl-shaped bodies, which Linneus compares to the prickles of a hedge-hog, are soft, solid,*

² Curtis.

conical or cylindrical substances, emitting seeds from every part of their substance^b.

Linneus (*syft. veget. ed.* 14. 978.) has six species of this Fungus, five with stems and one stemless. Of these Hudson has three, all having a stem. Dr. Withering has five with a stem, and six without. Swartz has added three from Jamaica. They chiefly grow on decaying wood.

HYDRAGONUM. See *Andromeda calyculata*.]

HYDRANGÆA. (So named by Gronovius, from *ὕδωρ* water, and *αὔξω* a vessel.)

Lin. gen. n. 557. *Schreb. n.* 760. *Gærtn. t.* 30.

Juss. 310. *Hortensia.* *Juss. gen.* 214.

Class. 10. 2. *Decandria Digynia.*

Nat. order of Succulentæ. Saxifragæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, five-toothed, permanent, small.

COR. *Petals* five, equal, roundish, larger than the calyx.

STAM. *Filaments* ten, longer than the corolla, alternately longer and shorter. *Anthers* roundish, twin.

PIST. *Germ* roundish, inferior. *Styles* two, short, distant. *Stigmas* blunt, permanent.

PER. *Capsule* roundish, twin, two-beaked with the double style, angular with several nerves, crowned with the calyx, two-celled with a transverse partition, opening by a hole between the horns.

SEEDS numerous, angular, acuminate, very small.

ESSENTIAL CHARACTER.

Caps. two-celled, two-beaked, containing many seeds.

Cor. five-petalled. *Cal.* five-cleft, superior.

SPECIES.

1. *Hydrangea arborescens.* *Shrubby Hydrangea.*

Lin. spec. 568. *Reich.* 2. 305. *Mill. fig. t.* 251.

Gron. virg. 50. *Dubam. arb.* 1. 298. *t.* 118.

Du Roi herb. 1. 309.

H. arborea. *Gærtn. fruct.* 1. 150.

Leaves ovate smooth; *alternate stamens* longer.

[2. *Hydrangea radiata.* *Downy Hydrangea.*

Walt. carol. 251. *Smith ic. rar.* 12.

Leaves lobed tomentose underneath.

3. *Hydrangea hortensis.* *Garden Hydrangea, or Chinese Guilder-Rose.*

Smith ic. rar. t. 12.

Hortensia. *Commerf. Juss. gen.* 214.

Primula mutabilis. *Lour. cochinch.* 104.

Viburnum ferratum. *Thunb. jap.* 124?

Sijo. *Kæmpf. exot.* 854.

L'Obier de la Chine. *Bucboz chin. t.* 45.

Leaves elliptical serrate very smooth, *stamens* all of an equal length.]

DESCRIPTIONS, &c.

1. This has a spreading woody root, which produces several soft, pithy, woody stems, from three to four feet high; they are four-cornered when young, and have a green bark, but as they grow older they become taper, and have a light-brown bark. Leaves at each joint opposite, three inches long, and two broad near the base, pointed, serrate; they are deep green above, and pale underneath, with many transverse veins; the petioles are about an inch long. Flowers terminating, in a cyme. Corolla small, white, having an agreeable odour.

[The flowers have sometimes eight stamens only according to Du Roi.

The calyx is fastened to the pericarp, which is a small capsule, almost hemispherical; marked with ten streaks, flattish above, not opening by valves, but by a central hole between the styles. Partition membranaceous, pervious at top when ripe. Seeds about twenty in each cell, compressed like a lens, netted-veined, brown¹.

Linneus had described the capsule as opening between the horns formed by the two permanent styles; we are at a loss to know why in his first mantissa he corrected this, and affirmed that the capsule is what he terms *circumscissa*, or cut round horizontally into two hemispheres. Gartner however suggests, that although in all his specimens the capsules opened by a hole at top, yet in some it may be otherwise, and they may

^b Withering, 4. p. 334. and Bulliard.

¹ Gartner.

split in half horizontally: of this we have an instance in *Heuchera*.

Native of Virginia and Canada: Introduced in 1736, by Peter Collinson^k.]

The flowers appear towards the end of July, and in August, but seldom perfect their seeds in England.

[2. This has a somewhat shrubby stem, branched, and growing to the height of about five feet: the leaves are broad, heart-shaped, serrated, and sharp-pointed: they are footstalked and stand opposite, and the lower surface is downy and of a silvery appearance.

Gathered in Carolina by T. Walter, Esq. and in Florida by Mr. J. Bartram^l.

3: Root fibrous, much branched, whitish. Stems several growing together, erect, shrubby, branched, round, with a smooth brown bark. Branches opposite, each pair crossing the others, round, smooth, leafy, green, with dark purple spots; flowering at the top. Leaves opposite, spreading and curved backwards, obtusely pointed, entire towards their base, bright green, pale beneath: foot-stalks short and thick, smooth, pale, channelled above. Cymes terminating, the size and figure of the common Guelder-Rose, and like that almost entirely composed of radiated abortive flowers, of a beautiful rose-colour, inodorous, green when young as well as in decay. Flower-stalks variously subdivided, smooth, sometimes hairy: partial ones of a deep rose-colour, roundish. Bractes none, except a few leaves about the base of the cyme, resembling those on the branches, but smaller. Calyx in a luxuriant state of deformity, very large, composed of four (rarely three or five) spreading, unequal, obovate leaves, which are entire, smooth, rose-coloured, slightly ribbed and permanent. Petals generally four, nearly equal, small, obovate, concave, the colour of the calyx, fading: Filaments eight, sometimes six or ten, as long as the corolla, spreading, awl-shaped, red. Anthers didymous, grayish with yellow pollen. Germ wanting. Styles two or three, (rarely one) nipple-shaped, standing close together, purple, half as long as the stamens. Stigmas blunt.

At the divisions of the cyme are sometimes found a few more complete five-cleft flowers, having a small five-toothed calyx, three spreading styles, and an inferior germ consisting of three cells; but these flowers wither away without coming to maturity: If the fruit should prove a capsule with many seeds, the plant will belong to this genus; but if it should be a berry, with a single seed when ripe, it must be referred to the genus *Viburnum*; there is every appearance however of its being an *Hydrangea*.

It is much valued on account of the great profusion of its very elegant flowers, which are monstrous in the same manner as the *Viburnum Opulus* or European Guelder-Rose.

Its native place is unknown. It is commonly cultivated in the gardens of China and Japan, whence it was introduced at Kew by Sir Joseph Banks, Bart. in 1790^m.

Loureiro says, that on dissecting the germ, and viewing it with the microscope, it appeared to be many-seeded, which confirms the idea of its being an *Hydrangea*.]

PROPAGATION AND CULTURE.

1. This is easily increased by parting the roots at the end of October, which is also the best time to transplant them. It should have a moist soil, for it grows naturally in marshy places; and requires no other culture, but to keep the plants clean from weeds, and to dig the ground between them every winter. If in severe frosts the stalks are killed, they will put out new ones the following spring.

[3. This beautiful plant being very easily increased by cuttings, has been pretty generally diffused within the compass of a few years. The soil that it thrives best in is a good rich loam. Some trials have been made with it to stand abroad; and it is hardy enough in a sheltered situation and warm soil to endure most of our winters; but it does not flower so well in the

^k Hort. kew.

^l Walter,

^m Smith.

open air as in a greenhouse. The Garden *Hydrangea* therefore must be considered rather as a greenhouse plant than a hardy one; and superfluous plants only ventured in the open borders of the flower-garden.

The second sort has not yet been introduced among us.

HYDRASTIS. (So named by Ellis—a nobilissima virgine americana. Linn.—Probably it was sent to Ellis by Miss Colden. May it not be derived from *υδραϊσ*?

Lin. gen. n. 704. Schreb. n. 958. Juss. 232.

Warneria. Mill. fig. 190. t. 285. Warneria. Mill. dist. (from Richard Warner, Esq. of Woodford Row, Essex, a very curious botanist, and a great collector of growing plants.)

Class. 13. 7. Polyandria Polygynia:

Nat. order of *Ranunculaceæ*, Juss.

GENERIC CHARACTER.

CAL. none.

COR. Petals three; ovate, regular.

STAM. Filaments numerous, linear, compressed, a little shorter than the corolla. Anthers compressed, blunt.

PIST. Germs numerous, ovate, collected into an ovate head. Styles very short. Stigmas broadish, compressed.

PER. Berry compounded of oblong acini, or granulations. SEEDS solitary, oblong.

ESSENTIAL CHARACTER.

Cal. none. Pet. three. Neet. none. Berry composed of one-seeded acini, or granulations.

SPECIES.

1. *Hydrastis canadensis*. Canadian Yellow-root.

Lin. spec. 784. Reich. 2. 674.]

Warneria canadensis. Mill. dist.—fig. 190. t. 285.

Hydrophyllum verum canadensium. Lin. spec. ed. 1. 146.

DESCRIPTION, &c.

The root is composed of thick fleshy tubers, of a deep yellow colour within, but covered by a brown skin, sending out fibres from several parts in the spring. It sends up one or two stalks about nine inches high, at their first appearance of a light green, but afterwards changing to a purplish colour, and hairy towards the top. Each stalk has one or two leaves, the lower petioled, but the upper embracing; they are six or seven inches in diameter, and are deeply cut into three, four, or five lobes, which are irregularly serrate; they are of a light green in the spring, but change afterwards to a deep green, with some dark spots or marks, and after the flower is decayed turn to a purplish colour. The stalk is terminated by one flower, which is white, and of very short duration, seldom continuing above three or four hours after it is expanded. The fruit is red and succulent; [a compound berry like the Raspberry and Mulberry; not at all like the Strawberry in structure.

According to Linneus, this plant resembles the *Hydrophyllum*. Leaves on each stalk two, petioled; emarginate at the base, palmate, serrate, the lobes having a small lobe on each side of them.

Jussieu says it has the fruit and habit of a *Rubus*, and is allied to *Podophyllum*.

Native of Canada. It was cultivated in 1759, by Mr. Miller, and flowers in May and Juneⁿ.]

PROPAGATION AND CULTURE.

This plant not increasing much, is rather uncommon in the English gardens; it delights in great shade and moisture; and when planted in dry ground, or much exposed to the sun, it rarely lives through one summer. In a moist loamy soil and shady situation, if it be left undisturbed three or four years, it will flourish.

[*HYDROCERATOPHYLLUM*. See *Ceratophyllum*.

HYDROCHARIS. From *υδωρ* water, and *χαρις* grace: The grace or beauty of the water.)

Lin. gen. n. 1126. Schreb. n. 1535. Juss. 67.

Stratiotes. Dill. gen. 9.

Morsus Ranae. Tournef. mem. acad. 1705. t. 4.

Microleuconymphaea. Boerb. 232.

Class. 22. 8. Dioecia Enneandria.

Nat. order of *Palmae*. *Hydrocharides*, Juss.

ⁿ Hort. kew.

GENERIC CHARACTER.

Male.

- CAL. *Spathe* three-flowered, two-leaved, oblong.
Perianth proper, three-leaved: *leaflets* ovate-oblong, concave, membranaceous at the edge.
 COR. *Petals* three, roundish, flat, large.
 STAM. *Filaments* nine, awl-shaped, upright, in three rows, the middle one puts forth an awl-shaped stipe from the inner base, like a style, which is placed in the centre; the two others are connected at the base, so that each inner filament coheres with each outer. *Antthers* simple.

PIST. The rudiment of a germ in the centre.

Female.

- CAL. *Spathe* none; flowers solitary.
Perianth as in the male, superior.
 COR. as in the male.
 PIST. *Germ* roundish, inferior. *Styles* six, the length of the calyx, compressed, bifid-channelled. *Stigmas* bifid, acuminate.
 PER. *Capsule* coriaceous, roundish, six-celled.
 SEEDS numerous, very small, roundish.

ESSENTIAL CHARACTER.

- MALE. *Spathe* two-leaved. *Cal.* trifid. *Cor.* three-petalled. *Filam.* the three inner style-bearing.
 FEM. *Cal.* trifid. *Cor.* three-petalled. *Styles* six. *Caps.* six-celled, many-seeded, inferior.

SPECIES.

1. *Hydrocharis Morfus ranæ.* *Frog-bit.*
Lin. spec. 1466. *Reich.* 4. 267. *hort. cliff.* 460.
fl. suec. n. 914. *Huds. angl.* 436. *Wither. arr.* 1127. *ed.* 3. 394. *Curt. lond.* 3. 64. 167. *Lightf. scot.* 622. *Relb. cant. n.* 732. *Hall. belv. n.* 1068. *Pollich pal. n.* 933. *Villars dauph.* 3. 528. *Fl. dan. t.* 878.
Nymphæa alba minima. *Baub. pin.* 193. *Raii hist.* 1320.—f. *Morfus ranæ.* *Park. theat.* 1252. 4.
N. minor f. Morfus ranæ. *Baub. hist.* 3. 773. 1.
Morfus ranæ. *Dod. pemp.* 583. 1. *cereal.* 228. *Lob. ic.* 1. 596. 1. *Ger. emac.* 818. 2.
Stratiotes foliis afari, femine rotundo. *Raii syn.* 290.
 β. *Morfus ranæ flore pleno odoratissimo.* *Raii cant.* 101.
 γ. *Nymphæa alba minor.* *Baub. pin.* 193.

DESCRIPTION, &c.

Root of many long, thick, white fibres. Leaves at each joint of the stalk, six or eight together, floating, roundish, kidney-shaped, fleshy, smooth, thick, perfectly entire, almost transparent, reddish underneath, marked with a few circular, and many transverse veins; they are about an inch and half in diameter, and when dry, on removing the outer skin, a most beautiful close net-work of veins is seen. Leaf-stalks from three to six or seven inches long, round, smooth, thick, transparent, having numerous cross bars. Sheaths in plants of both sexes numerous, next the root, ovate, transparent; in the male plant there is also a pair about the middle of the flower-stalk, containing the tender unopened blossoms as in a bladder. Flower-stalks the same length with the leaf-stalks, upright; in the male producing three or four flowers, in the female only one. Corolla white, with a yellow bottom, a little wrinkled and tender. Calyx yellowish. Stamens sometimes more than nine, as far as twelve. Anthers almost linear, two-celled. The nectary consists of three yellow glands, crowning the germ.

This plant increases by runners, furnished with pendulous gems, supported on long foot-stalks. These gems consist of two stipulaceous scales, folded together, within which are curiously enveloped the embryo leaves of the future plant.

Native of many parts of Europe, in deep ditches, and slow streams, with a muddy bottom, multiplying itself greatly by runners which shoot out to a great length, and at the joints drop down long roots, which penetrate deep into the mud. It flowers from June through the autumn.

β. Ray found it with a double flower smelling very sweet, in a ditch by the side of Audrey causeway,

* Curtis, Lightf. Woodw. in With. Pollich, Linn. succ.

close by the great wooden bridge, in the isle of Ely, plentifully^p.]

HYDROCOTYLE. (From ὕδωρ, water, and κοτύλη, a small cavity, vessel or cup. Because it grows in water, and the leaves are hollow; or the leaves being hollow contain water.)

[*Lin. gen. n.* 325. *Schreb. n.* 457. *Tournef.* 173. *Gært. t.* 22. *Juss.* 226.]

Class. 5. 2. Pentandria Digynia.

Nat. order of *Umbellatæ* or *Umbelliferae*.

GENERIC CHARACTER.

- CAL. *Umbel* simple.
Involucre commonly four-leaved, small.
Perianth scarcely any.
 COR. *universal* uniform in figure, not in situation: *Florets* all fertile.
Proper five-petalled: *Petals* ovate, acute, spreading, entire.
 STAM. *Filaments* five, awl-shaped, shorter than the corolla. *Anthers* very small.
 PIST. *Germ* upright, compressed, orbiculate, inferior, peltate. *Styles* two, awl-shaped, very short. *Stigmas* simple.
 PER. none. *Fruit* orbiculate, compressed, transversely bipartite.
 SEEDS two, semiorbiculate, compressed.

ESSENTIAL CHARACTER.

Umbel simple, with a four-leaved involucre. *Pet.* entire. *Seeds* semiorbiculate-compressed.

SPECIES.

1. *Hydrocotyle vulgaris.* *Common Marsh Pennywort.*
Lin. spec. 338. *synt.* 271. *Reich.* 1. 651. *hort. cliff.* 88. *fl. suec. n.* 234. *Crantz. umb.* 119. *Huds. angl.* 110. *Wither. arr.* 265. *ed.* 3. 284. *Curt. lond. n.* 63. *Relb. cant. n.* 207. *Hall. belv. n.* 812. *Pollich pal. n.* 264. *Fl. dan. t.* 90. *Krock. files. n.* 396. *Villars dauph.* 2. 661. *Tourn. inst.* 328. *Raii syn.* 322.
Cotyledon aquatica. *Baub. hist.* *Lob. ic.* 387. *Dod. pempt.* 133. 1. *Raii hist.* 1323. *Petiv. brit. t.* 6. f. 12.—*acris septentrionalium.* *Lob. obs.* 209. 4.—*palustris.* *Ger.* 424. 3. *emac.* 529. 5. *Park. theat.* 1214.
Ranunculus aquaticus Cotyledonis folio. *Baub. pin.* 180.
 β. *Hydrocotyle natans.* *Cyrrill. neap.* 1. 20. t. 6. f. 2. *Col. ecphr.* 1. 315. t. 316.
Leaves peltate, crenate, umbels five-flowered.
 2. *Hydrocotyle umbellata.*
Lin. spec. 338. *synt.* 271. *Reich.* 1. 651. *Swartz obs.* 111. *Brown. jam.* 185. *Gron. virg.* 30. *Plum. spec.* 7. *Lour. cochinch.* 177.
Cotyledon aquatica. *Sloan. jam.* 1. 212.
Erva de capitaon. *Marcgr. bras.* 27. *Raii hist.* 1323. 2.
Acaricoba. *Pis. bras.* 90.
Leaves peltate crenate-gashed, umbels many-flowered.
 3. *Hydrocotyle americana.*
Lin. spec. 338. *synt.* 271. *Reich.* 1. 651. *Loeff. itin.* 281.
Leaves kidney-form sublobate crenate.
 4. *Hydrocotyle hirsuta.*
Swartz prodr. 54.
Hirsute, leaves kidney-form lobate crenate, whorls four-flowered.
 5. *Hydrocotyle asiatica.*
Lin. spec. 338. *synt.* 272. *Reich.* 1. 652. *hort. cliff.* 88. *fl. zeyl. n.* 118. *Gært. fruct.* 1. 95. *Thunb. jap.* 116. *prodr. cap.* 49. *Herm. par. t.* 238. (*Valerianella*). *Pluk. phyt. t.* 106. f. 5. (*Ranunculo affinis*).
Pes equinus. *Rumph. amb.* 5. 455. t. 169. f. 1. *Codagam.* *Rheed. mal.* 10. 91. t. 46.
Leaves kidney-form toothletted.
 6. *Hydrocotyle chinensis.*
Lin. spec. 339. *Reich.* 1. 652.
Leaves linear, umbels many-flowered.
 7. *Hydrocotyle villosa.*
Lin. synt. 272. *suppl.* 175. *Thunb. prodr. cap.* 49.

* Ray cant.

- Centella villosa*. *Lin. spec.* 1393. *syft. ed.* 13. 708.
Reich. 4. 123. *amæn.* 6. 112.
Mercurialis afra. *Lin. syft. ed.* 13. 746.
Leaves cordate entire villose.
 8. *Hydrocotyle glabra*.
Lin. syft. 272. *suppl.* 176. *Thunb. prodr. cap.* 49.
Centella glabrata. *Lin. spec.* 1393. *syft. ed.* 13. 708.
Reich. 4. 124. *amæn.* 6. 112.
Leaves obovate smooth.
 9. *Hydrocotyle virgata*.
Lin. syft. 272. *suppl.* 176. *Thunb. prodr. cap.* 49.
Leaves linear smooth.
 10. *Hydrocotyle linifolia*.
Lin. syft. 272. *suppl.* 176. *Thunb. prodr. cap.* 49.
Leaves linear-lanceolate hirsute entire.
 11. *Hydrocotyle tomentosa*.
Thunb. prodr. cap. 49.
H. Solandra. *Lin. syft.* 272. *suppl.* 176. *Gertn. fruct.*
 1. 96.
Solandra capensis. *Lin. spec.* 1407. *syft. ed.* 13. 767.
Reich. 4. 336.
Leaves obovate toothed tomentose.
 12. *Hydrocotyle tridentata*.
Lin. syft. 272. *suppl.* 176. *Thunb. prodr. cap.* 49.
Leaves wedge-shaped trifid villose.
 13. *Hydrocotyle Ranunculoides*.
Lin. syft. 272. *suppl.* 177.
Leaves five-parted gashed.
 14. *Hydrocotyle erecta*.
Lin. syft. 272. *suppl.* 177.
Leaves cordate crenate, scapes few-flowered the length of the petioles.
 15. *Hydrocotyle moschata*.
Forst. flor. austral. n. 135.
Leaves kidney-form seven-lobed serrate villose, umbels many-flowered.

DESCRIPTIONS, &c.

1. Roots perennial, capillary, whitish. Stems creeping, round, smooth, striking root at the joints. Leaves orbicular, smooth, glossy, bright green, about an inch in diameter, waved, scalloped or somewhat lobed and notched on the edge, the centre a little depressed, and marked with a white dot; the veins form a kind of net-work on both surfaces. Leaf-stalks about two inches long, upright, round, smooth, naked below, above beset with bristly, horizontal, distant hairs. Common peduncles single, axillary, from the base of the leaf-stalks, little more than an inch in length, upright, round, slender, naked or slightly hairy, terminated by two umbels or glomerules, one springing out of the other, each containing from four or five to six and nine florets, which are very small, reddish white or rose-colour, on very short pedicels. There are two roundish, membranous white stipules at the base of each peduncle, and a very minute narrow tapering leaflet is placed under each floret. Seeds of a pale brown colour^a. Linneus remarks, that this plant has a simple umbel proliferous from the centre, and the two styles distant.

Native of most parts of Europe in marshes, also in Japan, and Jamaica, but not common. It flowers with us from may or june through july and august. The flowers being very small, and hidden by the leaves, are not much remarked, though they are abundant in their season; but the plant is easily known by the petiole of the leaf being inserted into the middle of it, a circumstance uncommon in European plants.

Gerarde calls this plant Water Penny-woort, Sheep-killing Penny-grasse, Penny-rot; in the north country, he says, it is called White-rot, to distinguish it from the Red-rot or Drosera; in Norfolk Flowkwoort (from its being supposed to occasion the Flukes in the liver of rotten sheep;) and by the husbandmen Sheep's-bane, because it killeth sheep that do eat thereof. This however is a vulgar error; for the rot in sheep is owing to their feeding in wet grounds; and perhaps to an insect (*Fasciola hepatica*) which from its shape is called a Fluke (or Flounder), and abounds in such situations, adhering to stones and plants, as well as in the livers and biliary ducts of sheep affected with the

rot. This plant, together with Drosera or Sundew, and Pinguicula or Butterwort, is common in marshy places, and therefore the disorder has been ascribed to these; but it is pretty certain that neither sheep nor any other quadruped feed on these plants.

In German it is called *Wassernabel*, *Sumpfnabel*. In Dutch, *Waternavel*. In French, *Hydrocotyle commune*; *le Goblet*, *l'Ecuelle d'eau*, *l'herbe des Patagons*. In Spanish, *Sombrera de agua*.

β. The Italian floating Hydrocotyle has very slender simple fibres collected into a head, issuing from the joints of the stems, and fastening themselves into the mud. Stems horizontal, thick, even, fleshy, tinged with brownish red, horizontal, jointed, floating. A single leaf comes out from each joint, on petioles a span long or more, curved inwards, thick at the base, fleshy, growing thinner at the top; the leaves are kidney-form, crenate-lobed or repand, with five large lobes, the middle one small, the two or three others with three-lobed notches; in front they are cut to the very centre with a scarcely gaping sinus, as in *H. americana*. All of them are floating. Flowers from five to ten, small, collected into a head. Seeds compressed, semiobovate. The peduncles are three inches long, and issue from the joints of the stem.

The leaves are not peltate and emarginate, as in the common sort, but kidney-form and sublobate, the stems thick, and the petioles very fleshy. It seems to approach nearer to *H. americana*^b.

Native of Italy.

2. Roots filiform, capillary, branched, whitish. Leaves radical, peltate, orbiculate, crenate-gashed, smooth, veined, on smooth round petioles, from two to five inches, and often in watery places a foot long. Peduncles also radical, the length of the petioles, round. Flowers in umbels, hermaphrodite. Involucre scaly, with ovate minute leaflets. Umbel simple; pedicels numerous, erect, one-flowered. Corolla acute, reflex, white. Styles contiguous at the base, the length of the petals. Fruit roundish, compressed, striated^c.

According to Linneus it is very like the common sort, and has been confounded with it; but it differs in having the scape twice as long as the leaves, and more than twenty florets in a simple umbel.

Native of Jamaica, in marshes, of several parts of the continent of America, and also of Cochinchina; if the plant which these authors describe be the same.

3. This has the appearance and size of the first. The leaves are cut in front to the very centre with a sinus that scarcely gapes, and are divided at the edge into nine obsolete lobes, each of which has three smaller notches. Umbel five-flowered^d. This description seems to accord with Columba's plant, (1. β.) and that may perhaps be the same with this, or a variety of it.

Native both of North and South America, and the East Indies.

4. Native of Hispaniola^e.

5. This differs from the fourth species in having the toothlets or notches round the leaves equal, the substance also of the leaves is twice as thick, and they are almost hoary, and there are several together at each joint of the stalk, whereas in that they are single^f.

Native of the East Indies, Japan, the Cape of Good Hope, Jamaica, &c. Introduced here in 1774, by Mr. Francis Masson^g.

6. This is of the same size with the foregoing sorts. Stem creeping. Leaves even, blunt, flat, often two at a joint. Scapes the length of the leaf. Umbel many-flowered.—Native of China^h.

7. Root fibrous. Leaves petioled, undivided, quite entire, resembling those of the sweet Violet (*Viola odorata*), mucronate, tomentose, both at the roots, and about the extremities of the stems, which are prostrate, and have flowers at the ends with the leaves. Peduncles several, filiform, shorter than the leaves, one-flowered. Flowers small.—Native of the Cape of Good Hope.

^a Cyrillo.

^c Swartz.

^d Linn. spec.

^e Swartz.

^f Linn. spec.

^g Hort. kew.

^h Linn. spec.

^a Curtis, Withering.

8. Stems creeping. Leaves alternate, three-nerved, quite entire, acute, petioled: stipules linear, acuminate, flowers axillary, peduncled.—This also is a native of the Cape of Good Hope.

9. Found at the Cape of Good Hope by Thunbergⁱ. Of this we have no description.

10. This is like the preceding, but the leaves are much longer; the peduncles more slender and also longer.—Found at the Cape of Good Hope by Thunberg^k.

11. Root caulescent, branched on the surface of the earth. The whole plant hoary tomentose. Stems an inch long, scarcely branched. Leaves alternate, petioled, gashed and seven-toothed. Peduncles lateral next the lower leaves, and of the same length with them. Receptacles of the flowers very dark purple. Petals white^l.

The central flower being fertile (having six stamens and a pistil), and being surrounded by barren flowers, Linneus made a distinct genus of it, placed it in the order Monoecia of the class Polygamia, and named it *Solandra*, from the amiable and learned D. C. Solander, L. L. D., who found it at the Cape of Good Hope; in the Supplement, however, and in the 14th edition of the Systema it is removed into this genus, with which it certainly agrees in habit. Gartner thus describes the fructification: Umbel pedicelled. Involucre four-leaved, linear, the length of the fruit, tomentose on the outside. Florets four or six, barren, peduncled in the circuit, and a single one in the centre becoming a sessile fruit; which is ovate, gibbous, compressed on the side, twin, whitish. Seeds semiovate, turgidly lenticular, with five sharp ribs, and in the intervals between these netted with transverse nerves.

12. This is very like the preceding, but differs in having linear leaves, narrower towards the base, with three equal teeth at the end; not ovate and five or seven-toothed, as in that; peduncles much shorter than the leaf, not equal in length; stem shorter, woolly, herbaceous, not woody and prostrate. The central is certainly hermaphrodite in this.—Found at the Cape of Good Hope by Sparrmannⁿ.

13. Stem creeping, jointed. Leaves solitary or two together; the divisions three-lobed and blunt, as in Ranunculus. Petioles frequently the length of the finger. Scapes cauline, an inch long. Umbel simple. Petals white.—Found in Mexico by Mutis.

14. Leaves sharply toothed on the sides, an inch in length; petioles radical, a span long, hairy at the top. Scapes radical, the length of the plant, erect as is the whole plant, not creeping, and having a few flowers at the top.—Native of Jamaicaⁿ.

15. Native of New Zealand^o.

HYDROLEA.

Lin. gen. n. 318. *Schreb. n.* 445. *Loefl.* 310. *Aubl.* 110. *Gartn. t.* 55. *Juss.* 134.

Class. 5. 2. Pentandria Digynia.

Nat. order of Convolvuli, Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-parted: *parts* oblong, acute, unequal, permanent.

COR. one-petalled, wheel-bell-shaped. *Tube* shorter than the calyx. *Limb* five-parted, spreading; *segments* ovate, incumbent.

STAM. *Filaments* five, awl-shaped, cordate at the base. *Anthers* oblong, curved, incumbent.

PIST. *Germ* ovate. *Styles* two, filiform, spreading. *Stigmas* truncate.

PER. *Capsule* ovate, two-celled, two-valved: *partition* contrary.

SEEDS very many, minute, imbricated: with an ovate large *Receptacle*.

OBS. *In some flowers the calyx and corolla are six-cleft, with six stamens.* *Aubl.*

ESSENTIAL CHARACTER.

Cal. five-leaved. *Cor.* wheel-shaped. *Filam.* cordate at the base. *Caps.* two-celled, two-valved.

ⁱ Linn. suppl.

^k Ibid.
ⁿ Ibid.

^l Linn. spec.
^o Forster.

^m Linn. suppl.

SPECIES.

1. *Hydrolea spinosa.*

Lin. spec. 328. *Reichb.* 1. 633. *Gartn. fruct.* 1. 263.

Planta lacustris f. palustris spinosa. Loeffl. itin. 310. *Stem with axillary spines, flowers clustered terminating.*

2. *Hydrolea inermis.*

Lour. cochinch. 272.

Stem unarmed, flowers solitary lateral.

3. *Hydrolea zeylanica.*

Vahl symb. 2. 46.

Nama zeylanica. Lin. syst. 265. *spec.* 327. *Reichb.* 1. 633. *fl. zeyl. n.* 117. *t.* 2. *amæn.* 1. 395.

Steris javana. Lin. mant. 54. *syst.* 264.

S. aquatica. Burm. ind. 73. *t.* 39. *f.* 3.

Tsjeru-vallel. Rheed. mal. 10. 55. *t.* 28.

Alfine veronicae affinis, &c. Pluk. phyt. t. 130. *f.* 2. *Raii app.* 498.

Stem unarmed, flowers subracemed, leaves lanceolate.

4. *Hydrolea trigyna.*

Swartz prodr. 54.

Campanula americana spinosa & hirsuta, flore patulo & sessili caeruleo. Houst. Mss.

Stem spiny, leaves oblong hirsute, flowers three-styled axillary.

DESCRIPTIONS, &c.

1. Stems upright, a foot high, with alternate branches. Leaves lanceolate, sessile, somewhat waved, viscid. Spines axillary, spreading. Flowers terminating, subsessile, few, clustered^p. Capsule acuminate, with a groove on each side, membranaceous, very thin, subdiaphanous. Partition simple, very narrow. Receptacle very large, fungose, hollowed with a groove into which the partition is inserted, divided as it were into two hemispheres. Seeds ovate, attenuated towards the umbilicus, very obscurely grooved, pale brownish red^q. When the flowers are six-cleft and have six stamens, there are three styles, and the capsule is three-celled and three-valved, with a three-sided partition^r.

Native of South America.

2. Stem herbaceous, annual, one foot high, upright, almost simple. Leaves lanceolate-linear, quite entire, smooth, sessile, scattered. Flowers blue, on one-flowered peduncles. Calyx inferior. Corolla bell-shaped, with a short tube, the segments nearly equal to the calyx. Filaments placed on the tube, shorter than the limb. Styles upright, shorter than the stamens. Seeds roundish, surrounding two ovate columns, adhering to the bottom of the capsule, free at top, as in *Gentiana*. The corolla is not properly wheel-shaped, but wheel-bell-shaped.

Native of Canton in China, in moist places.

3. Stem herbaceous, half a foot high, even, upright, branched. Leaves lanceolate, alternate, petioled, smooth, quite entire, spreading. Racemes erect, one from each axil of the leaves, simple, erect, the length of the leaves. Flowers alternate, on pedicels the length of the flowers^s.

It is thus described under the name of *Steris* in the first Mantissa. Appearance that of a small *Capficum*. Stem herbaceous, very much branched and even. Leaves alternate, petioled, oval-oblong, quite entire, sharpish, even. Peduncles opposite to the leaves, axillary or terminating, subdivided or one-flowered. Corolla blue, the same size as that of *Capficum*.

Native of the East Indies.

4. Native of the West Indies^t.

HYDROPHACE. See *Lemna*.

HYDROPHYLAX. (*From ὕδωρ water, and φύλαξ a keeper or guardian.*)

Lin. gen. Schreb. n. 159. *suppl.* 14. *Juss.* 210.

Sarissus. Gartn. t. 25.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of Rubiaceæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, upright, four-parted, superior, permanent: *segments* ovate, acute, margined, somewhat fleshy.

^p Linn. spec.

^q Gartner.

^r Jussieu.

^s Linn. zeyl.

^t Swartz.

COR. one-petalled, funnel-form: *tube* longer than the calyx: *limb* angular, four-cleft; segments ovate, revolute: *throat* bearded.

STAM. *Filaments* four, placed on the tube, decurrent, upright, longer than the corolla. *Anthers* subhastate.

PIST. *Germ* oblong, inferior. *Style* filiform, curved. *Stigma* bifid.

PER. *Berry* juiceless, ovate, compressed, with three ribs on each side, the middle one higher, with an attenuated margin, a little bowed in, fungous, two-celled; with a transverse partition.

SEEDS solitary, oblong, bowed in a little, three-sided, two-grooved on the inner side, somewhat rugged.

ESSENTIAL CHARACTER.

Cal. four-parted. Cor. funnel-form. Fruit ancipital, one-seeded.

SPECIES.

1. *Hydrophylax maritima*.

Lin. syst. 160. *suppl.* 126.

DESCRIPTION, &c.

It has the appearance of *Arenaria rubra maritima*, but is larger. Root simple, filiform, blood-red, long, fleshy, sweet. Stem creeping, filiform, smooth, coloured, jointed, sheathed with blunt membranaceous permanent sheaths, very long. Leaves opposite, spreading, ovate, acute, quite entire, approximating, fleshy, shining, roughened with very small, whitish, pellucid calluses; petioles short, membranaceous, margined, sheathing the stem, permanent; when the leaves fall these become permanent sheaths of the stalks; flowers axillary, subsessile, usually two together, but not opposite, erect; corolla pale blue; anthers blue.—Found by Koenig in driving sand on the sea shore near Guldulhr in the East Indies^a.]

HYDROPHYLLUM. (*From ὕδωρ, water, and φύλλον, a leaf.*)

Lin. gen. n. 204. *Schreb. n.* 267. *Tournef.* 16.

Juss. 129. *Gertn. t.* 110.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Borraginæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-parted, scarcely shorter than the corolla, spreading, permanent, with awl-shaped segments.

COR. one-petalled; bell-shaped, five-cleft; segments upright, obtuse, emarginate.

Nectary, a cleft closed by two longitudinal converging plates, fastened to the petal within the middle of each segment.

STAM. *Filaments* five, awl-shaped, longer than the corolla. *Anthers* incumbent, oblong.

PIST. *Germ* superior, ovate, acuminate. *Style* awl-shaped, the length of the stamens. *Stigma* bifid, acute, spreading.

PER. *Capsule* globular, one-celled, two-valved.

SEED single, round, large. (Seeds four, nestling within a berried receptacle. G.)

ESSENTIAL CHARACTER.

Cor. bell-shaped, having five longitudinal melliferous streaks on the inside. *Stigma* bifid. *Caps.* globular, two-valved.

SPECIES.

1. *Hydrophyllum virginicum*. *Virginian Water-leaf*.

Lin. spec. 208. *syst.* 195. *Reich. l.* 417. *hort. cliff.*

44. *Gertn. fruct.* 2. 133. *Gron. virg.* 21. *Sabb. hort. l.* t. 15.

Dentariæ facie planta monopetalos, fructu rotundo monopyreno. Mor. hist. 5. 599. *f.* 15. *t.* 1.

D. affinis. *Echii flore, capsula Anagallidis. Dod. mem.* t. 77. *Raii hist.* 1346.

Leaves pinnatifid.

[2. *Hydrophyllum canadense*. *Canadian Water-leaf*.

Lin. spec. 208. *Reich. l.* 417.

Leaves lobate-angular.]

DESCRIPTIONS, &c.

1. The root is composed of many strong fleshy fibres, which spread wide on every side: from this arise many leaves on foot-stalks five or six inches long, jagged into three, five or seven lobes, almost to the midrib; they are indented on their edges, have several veins running from the midrib to the sides, and are of

a lucid green. The flowers rise with foot-stalks from the root, having one or two small leaves of the same shape with the lower; they are in loose clusters hanging down, of a dirty white, and making no great figure. [Capsule marked on each side with a shallow groove, and sprinkled all over with small white bristles. Receptacle globular, free, filling the whole cavity of the capsule, at first herbaceous and fleshy, divided into little cells equal in number with the nascent germs; afterwards membranaceous and spongy; rufescent, splitting in two with the capsule. Seeds regularly four, but often fewer, nestling in the receptacle, irregularly ovate and angular, elegantly netted with very minute excavations, yellowish white^b. It flowers here in may and june, and the seeds sometimes ripen in august.

Native of Virginia and Carolina, on moist spongy ground. It was cultivated in 1739, by Mr. Miller^c.] He supposes that Morinus gave it the title of Water-leaf, because in spring water stands in the cavities of the leaf, and not from its growing in water, as Tournefort conjectures.

[2. This has all the same structure with the preceding, and differs only in the leaves, which have the same shape with those of the *Acer* or *Maple*, half-five-lobed, smooth, with the lobes acute, slightly toothed, and having a sinus at the petiole, as in the leaves of *Maple*.

Native of Canada^d. Cultivated by Mr. Miller in 1759. It flowers in may^e.]

PROPAGATION AND CULTURE.

These plants are very hardy in respect to cold, but they should be planted in a moist rich soil and shady situation: in a warm dry soil they will not prosper, unless they be constantly watered in dry weather. They may be increased by parting the roots in autumn; for if they are not well rooted before spring, they will require abundance of water.

[HYDROPHYLLUM. See *Hydrastis*.

HYDROPIPER. See *Elatine* and *Polygonum*.]

HYMENÆA. (*From Hymen the god of marriage.*)

Lin. gen. n. 512. *Schreb. n.* 698. *Juss.* 351.

Courbaril. Plum. 36.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Lomentaceæ*. *Leguminosæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, coriaceous: *tube* short, turbinate, compressed, permanent, with an oblique mouth: *limb* five-parted, almost regular, upright, deciduous; segments ovate, blunt; two opposite flattish, a little broader; two others concave, with one side narrower.

COR. five-petalled, inserted into the neck of the calyx, subpapilionaceous, with the petals almost equal. *Banner*, the two uppermost petals, obliquely ovate, obtuse, sessile, at the upper concave segment of the calyx. *Wings*, two petals, similar, lateral, a little narrower. *Keel*, the lowest petal, channelled and excavated, approximating to the wings, within the lower hollow segment of the calyx.

STAM. *Filaments* ten, distinct, awl-shaped, erect, bent down above the middle, very long, between the keel and the wings, inserted into the neck of the calyx. *Anthers* linear, fixed by the back.

PIST. *Germ* sabre-shaped, compressed, pedicelled. *Style* very long, bristle-shaped, bent down. *Stigma* thickened, obliquely truncate.

PER. *Legume* woody, very large, ovate-oblong, obtuse, one-celled, filled with farinaceous pulp.

SEEDS several, (four to eight, large) ovate, wrapped up in pollen and fibres.

ESSENTIAL CHARACTER.

Cal. five-parted. Pet. five, almost equal. Style twisted inwards. Legume filled with farinaceous pulp.

SPECIES.

1. *Hymenæa Courbaril*. *Locust Tree*.

Lin. spec. 537. *syst.* 392. *Reich. 2.* 248. *hort. cliff.*

484. *upf.* 305. *mat. med.* 510. *Gertn. fruct.* 2. 305.

Brown. jam. 221. *Jacqu. amer. pict.* 63. *t.* 264. *f.* 65.

^b Gertner.

^c Hort. kew.

^d Linn. spec.

^e Hort. kew.

^a Linn suppl.

Coufbaril bifolia, fructu pyramidato. *Plum. gen.* 49.
 Cératia diphyllus, &c. *Pluk. phyt. t.* 82. f. 2.
 Jetaiba. *Marcgr. bras.* 101. l. 3. c. 5. *Pif. bras.* 60.
 l. 4. c. 8.
 Arbor filiquosa ex qua Gummi Anime. *Baub. pin.* 404.
Raii hist. 1760.

DESCRIPTION, &c.

This is a very large spreading tree in the West Indies, where it grows in great plenty; it has a large stem, covered with a russet bark, which divides into many spreading branches, garnished with smooth stiff leaves, which stand by pairs, their base joining at the foot-stalk, to which they stand oblique, one side being much broader than the other, the two outer sides being rounded, and their inside straight, so that they resemble a pair of sheep-shears; they are pointed at the top, and stand alternately on the stalk. The flowers are produced in loose spikes at the end of the branches, some of the short ligneous foot-stalks supporting two, and others three flowers, which are composed of five yellow petals striped with purple; the petals are short and spread open; the stamina are much longer, and of a purplish colour; these flowers are succeeded by thick, fleshy, brown pods, shaped like those of the Garden Bean; they are six inches long, and two inches and a half broad, of a purplish brown colour, and a ligneous consistence, with a large suture on both edges; they contain three or four roundish compressed seeds, divided by transverse partitions, [and inclosed in a whitish substance of fine filaments, as sweet as honey. The Indians eat this substance with great avidity, though it is apt to purge when fresh gathered; but it loses this quality as it grows old.

Between the principal roots of the tree exudes a fine transparent resin, yellowish or red, which is collected in large lumps, is called gum *Anime*, and makes the finest varnish that is known, superior even to the Chinese *lacca*: for this latter use it is dissolved in the highest rectified spirits of wine. It burns readily, and with a clear flame, emitting a grateful and fragrant smell, for which reason it is sometimes ordered by way of fumigation in the chambers of persons labouring with asthma or suffocative catarrhs. Its vapours not only strengthen the head, but all parts of the body affected with cold. Some apply it outwardly, dissolved in oil or spirits of wine, to strengthen the nerves. An oil may be distilled from it, prevalent in palsies, cramps and contractions of the sinews. The solution in spirits has been thought not inferior to Guaiacum in venereal cases. A decoction of the leaves expels flatulencies, and gives ease in colicky pains, by gently opening the bowels; and the inward bark is an excellent vermifuge in substance or decoction.

The wild bees are fond of building their nests in this tree, which grows to a considerable size, and is looked upon as excellent timber; but it must be very old before it is cut, otherwise the heart will be but small^a.

It is in great request for wheel-work in the sugar-mills, particularly for cogs to the wheels, being extremely hard and tough, it is so heavy that a foot cube weighs about a hundred pounds, and it will take a fine polish^b.

Native of the West Indian islands, and the continent of America. Cultivated here in 1739^c.]

PROPAGATION AND CULTURE.

It is easily raised from the seeds if they are fresh; these must be sown in pots, and plunged into a hot-bed of tanners bark: there should be but one seed put into each pot, or if there be more, when the plants appear, they should be all drawn out to one soon after they come up, before their roots entangle, when it will be hazardous doing it; for if great care be not taken, the plant intended to be left may be drawn out with the other. As the roots of this plant are but slender, so they are very difficult to transplant; for unless a ball of earth is preserved to their roots, they seldom survive their removal, therefore they must be seldom transplanted from one pot to another. The plants

^a Browne and Long *jam.* 3. 728, &c.^c Hort. kew. from Mill. dict.^b Jacquin.

must constantly remain in the tan-bed in the stove, and should be treated the same way with other tender plants of the same country, giving but little water to them, especially in the winter. When these plants first appear, they make considerable progress for two or three months, after which time they are at a stand perhaps a whole year without shooting, being in their growth very like the *Anacardium*, or Cashew Nut, and very difficult to preserve long in this country.

[HYMENOPHYLLUM. See *Trichomanes*.

HYOBANCHE.

Lin. gen. Schreb. n. 1046. *Juss.* 101.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatae*. *Pediculares*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* seven-leaved; *leaflets* linear, acuminate, erect, the length of the corolla.

COR. one-petalled, ringent: upper lip vaulted, emarginate; lower none.

STAM. *Filaments* four, twin, inserted into the base of the corolla, of a middling length. *Anthers* ovate, nodding, opening on the upper side.

PIST. *Germ* ovate. *Style* filiform, curved at the top. *Stigma* thickened, blunt, emarginate.

PER. *Capsule* roundish, two-celled.

SEEDS numerous, small.

OBS. The calyx and corolla forbid its being associated with *Orobanche*.

ESSENTIAL CHARACTER.

Cal. seven-leaved: Cor. ringent, without any lower lip. Caps. two-celled, many-seeded.

SPECIES.

1. *Hyobanche sanguinea*.

Lin. syst. 574. *Reich.* 3. 186. *mant.* 253.

Orobanche mauritanica, flore purpureo. *Pet. gaz. t.* 37. f. 4.

Orobanches species æthiopica. *Pluk. mant.* 142.

DESCRIPTION, &c.

Stem half a foot high, quite simple, woody, thick, closely imbricated with leaves, or rather ovate scales, convex on the outside, smooth, blunt. Spike terminating, dense, fleshy, villose, the length of the stem; and three times as broad, imbricated with bractes and flowers. Bractes (one to each flower) ovate-oblong, hirsute on the outside, the same length with the tube of the flowers, which are sessile. The whole plant resembles the *Orobanche* in stature, but it is blood red. The seven-leaved calyx, and corolla destitute of a lower lip, are sufficient reasons for the removal of this plant from the genus *Orobanche*.—It is a native of the Cape of Good Hope, and is parasitical at the roots of shrubs^d.]

HYOSCYAMUS. (ἵος κνᾶμος, Hog-Bean. These animals, according to *Ælian*, being poisoned with it, and dying, unless drenched within and without with water.)

Lin. gen. n. 247. *Schreb. n.* 333. *Tournef.* 42.

Juss. 124. *Gartn. t.* 76.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Luridæ*. *Solanææ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, tubular, ventricose at bottom, with a five-cleft sharp mouth, permanent.

COR. one-petalled, funnel-form: tube cylindrical, short; limb from erect spreading, half-five-cleft; segments obtuse, one broader than the others.

STAM. *Filaments* five, awl-shaped, inclining. *Anthers* roundish.

PIST. *Germ* roundish. *Style* filiform, the length of the stamens. *Stigma* headed.

PER. *Capsule* ovate, obtuse, marked with a line on each side, two-celled, two capsules closely approximating, with a lid opening horizontally. *Receptacles* half ovate, fixed to the partition.

SEEDS numerous, unequal, (irregular.)

OBS. *H. physalodes* and *Scopolia* differ in having the fruit seldom opening, and a more regular corolla.

ESSENTIAL CHARACTER.

Cor. funnel-form obtuse. Stam. inclined. Caps. two-celled, covered with a lid.

^d Linn. mant.

SPECIES.

1. *Hyoscyamus niger*. *Black or common Henbane*.
Lin. spec. 257. *Reich.* 1. 499. *hort. cliff.* 56.
fl. suec. n. 199. *mat. med.* 64. *Huds. angl.* 92.
Wither. arr. 231. *ed.* 3. 252. *Lightf. scot.* 144.
Relb. cant. n. 173. *Woodv. med. bot.* 143. t. 52.
Hall. herb. n. 580. *Gmel. sib.* 4. 93. *Scop. carn.*
n. 253. *Pollich pal.* n. 225. *Allion. pedem.* n. 375.
Krock. siles. n. 340. *Villars dauph.* 2. 489.
Blackw. herb. t. 550. *Plenck, ic.* 97.
Hyoscyamus. *Brunf.* 224. *Matth.* 1064. *Camer.*
epit. 807. *Rivin. mon.* t. 102.
H. vulgaris. *Baub. hist.* 3. 627. 1. *Raii hist.* 711.
syn. 274.—*vel niger.* *Baub. pin.* 169. *Tourn. inst.*
118. *Garid. aix.* 235. *Mor. hist. f.* 5. t. 11. f. 1.
H. niger. *Dod. pempt.* 450. 1. *Lob. obs.* 139. 1.
Ger. 283. 1. *emac.* 353. 1.—*vulgaris.* *Clus. hist.* 2.
83. *Park. theat.* 362. 1.
H. flavus. *Fuch. hist.* 833.
H. secundus Galeni. *Trag.* 133.
Leaves stem-clasping sinuate, flowers sessile.
2. *Hyoscyamus reticulatus*. *Egyptian Henbane*.
Lin. syst. 257. *Reich.* 1. 499. *Gron. orient. n.* 51.
Retz. obs. 5. 2.
H. ægyptius. *Raii hist.* 712. *Park. theat.* 363. f. 3.
H. cauliculis spinosissimis, ægyptiacus. *Baub. pin.* 169.
—*item, rubello flore. ejusd. ibid.* *Ger. emac.* 355. 5.
Mor. hist. f. 5. t. 11. f. 6, 7.
H. peregrinus. *Clus. pann.* 502.
H. peculiaris. *Cam. hort.* 77. t. 22.—*flore purpu-*
rascente. *Baub. hist.* 3. 628.—*item, syriacus, ejusd.*
Camer. hort. t. 21.
Stem-leaves petioled cordate sinuate acute, floral leaves
quite entire, corollas ventricose.
3. *Hyoscyamus albus*. *White Henbane*.
Lin. spec. 257. *Reich.* 1. 500. *hort. cliff.* 56. *Gartn.*
fruct. 1. 369. *Sauv. monsp.* 275. *Krock. siles.*
n. 341. *Blackw. herb.* t. 111. *Sabb. hort.* 1.
t. 91. *Best. syst. æst.* 8. t. 8. f. 2. *Mill. fig.*
t. 149. *dist. n.* 2, 3. *Plenck. ic.* 98. *Ger.* 283.
emac. 353. *Park. theat.* 363. n. 2. *Baub. hist.* 3.
Raii hist. 712.
H. albus major. *Baub. pin.* 169. *Mor. hist. f.* 5. t. 11.
f. 2.—*item, albus minor, ejusd.* *Ger. emac.* 354. 3.
Mor. f. 3.
H. albus vulgaris. *Clus. hist.* 2. 118. *Lob. adv.* 107.
Leaves petioled sinuate obtuse, flowers sessile.
4. *Hyoscyamus aureus*. *Golden-flowered or Shrubby*
Henbane.
Lin. spec. 257. *syst.* 220. *Reich.* 1. 500. *hort. cliff.*
56. *Curt. magaz.* 87.
H. creticus luteus major. *Baub. pin.* 169. *prodr.* 92.
Raii hist. 712. *Mor. hist. f.* 5. t. 11. f. 4.
H. albus creticus. *Clus. hist.* 2. 84.
H. creticus. *Park. theat.* 362. f. 3.
β. *H. cret. lut. minor.* *Baub. pin.* 169. *Mor. f.* 5.
Ger. emac. 354. 4.
H. aureus. *Alp. exot.* 99. t. 98. *Raii hist.* 712.
Leaves petioled toothed acute, flowers peduncled, fruits
pendulous.
5. *Hyoscyamus muticus*.
Lin. syst. 220. *Reich.* 1. 500. *mant.* 45.
H. minor. *Mill. dict. n.* 4.
H. albus ægyptius. *Alp. exot.* 193. t. 192? *Mor. f.* 8.
Leaves petioled ovate acutangular, calyxes awnless, bractes
undivided.
6. *Hyoscyamus pusillus*. *Dwarf Henbane*.
Lin. syst. 220. *Reich.* 1. 501. *mant.* 339. *hort.*
cliff. 56. *ups.* 44. *Murr. prodr.* 144. *Pallas*
it. 2. 329. *Gouan illustr.* 7.
H. pusillus aureus americanus, antirrhini foliis glabris.
Pluk. phyt. t. 37. f. 5.
Leaves lanceolate toothed, lower floral leaves in pairs,
calyxes spiny.
- [7. *Hyoscyamus physaloides*. *Purple-flowered Henbane*.
Lin. spec. 258. *syst.* 221. *Reich.* 1. 501. *hort. ups.*
44. *amoen.* 7. t. 6. f. 1.
Pulmonaria hirta. *Lin. spec.* 1667. (descr.)
Leaves ovate quite entire, calyxes inflated subglobular.
8. *Hyoscyamus Scopolia*. *Nightshade-leaved Henbane*.
Lin. syst. 221. *Reich.* 1. 501. *mant.* 46, 339.
Scop. carn. n. 254. *Gartn. fruct.* 1. 370.

Scopola carniolica. *Jacqu. obs.* 1. 32. t. 20.

Solanum somniferum bacciferum. *Baub. pin.* 166.

S. somn. alterum. *Camer. epit.* 816. *Park. theat.* 346.
f. 5. *Raii hist.* 680.

Leaves ovate entire, calyxes inflated bell-shaped even.]

DESCRIPTIONS, &c.

1. Common black Henbane has long fleshy roots, which strike deep into the ground, and are branched. Bottom leaves soft, deeply slashed on their edges, and spreading on the ground. The stalks, which do not rise till the second spring, have leaves of the same shape, but smaller, and clasping, and are about two feet high: on the upper part are flowers standing on one side in a double row, sitting close to the stalk alternately.

[The whole plant is covered with unctuous fetid hairs. The corolla is yellow, or rather pale yellowish brown, beautifully netted with purple veins, and a dark purple eye or base: the shape is irregular, gradually tapering into the tube, with five prominent ribs on the outside; the upper segment is the largest, the rest gradually diminishing downwards; the upper incisions are shallow, the lowermost extending half way to the base, and much wider than the rest. Calyx a little distended on the under side; woolly at the base with long soft hairs, matted with those of the flowers next above and below. Filaments white, with soft hairs below; the uppermost shortest, those below gradually increasing in length. Anthers and style of a fine deep purple. The capsules do not split, as most others do, into two or more valves, but are covered with a lid, that rain, as Linneus expresses it, may not spoil the seeds. This lid, though it may easily be separated with a knife, yet adheres so strongly to the body of the capsule, that the seeds more frequently escape by the perforations of insects, than from the falling off of the lid. The calyx becomes rigid, and the capsules continue on the dead plant till the plants of the next year are in flower; when, the leaves being fallen off, the fruit appears in bunches pointing one way, in two rows from one side of the stem and branches. Seeds very abundant, gray, excavated and angular^a.

The whole plant has a strong and peculiar odour, arising from the viscid hairs with which it is covered, greatly affecting the head of some persons, as soon as they come within its atmosphere.

The root, herb, and seeds, taken internally, are reputed poisonous, and well attested instances of their bad effects are recorded. Madness, convulsions, and death are the general consequence. Dr. Smith says, he has often eaten the seeds with impunity^b (and I have done the same, in small quantities). Lightfoot however affirms, that a few of the seeds have been known to deprive a man of his reason and limbs; relying probably on the relation of Haller, that one of his fellow pupils under Boerhaave at Leyden, in the year 1725, having eaten Aconite, Apocynum, and Belladonna with impunity, was at length taken in by the seeds of Henbane; lost his reason and the use of one side, but his life was saved by Boerhaave.

Linneus affirms, that the roots have been frequently eaten for Parsneps, and have produced delirium and not unfrequently death.]

Mr. Miller informs us, that a mixture of these roots having been imported with Gentian, has been attended with very bad effects.

[Other relations of the narcotic and poisonous effects of the several parts of Henbane may be met with in almost all the authors who have treated of this nauseous plant.

Linneus says, it is not touched by any quadruped, except perhaps the goat, and that animal is not fond of it. Sheep, it is said, will sometimes eat it when young. There is a sort of bug (*cimex hyoscyami*) very common on it. *Chrysomela hyoscyami* also feeds upon it. According to Linneus, the roots scattered about a house will drive away mice^c.

Henbane has been used medicinally from time immemorial; and there is no doubt of its being an useful

^a Withering, Stokes in With: Pollich, Linn. suec. Lightf.

^b Withering.

^c Fl. suec.

medicine under proper management. The Edinburgh college order the expressed juice of the plant to be evaporated to an extract; and perhaps in this state it may be advantageously joined with opium, where the effects of the medicine are desirable, and costiveness is to be avoided. The dose is from half a scruple to half a dram^d. Villars says, the extract may be given safely in a dose of two or three grains, increasing the quantity gradually; but that it ought to be prepared from the plant just going into flower, and in balneo mariæ; for it has neither odour nor activity, if the plant be young, or if the extract be made with an open strong fire. He has administered it internally in epilepsy and convulsions, and found that it put off the fits, and diminished their violence, but did not effect a cure. Stoerck and others after him have recommended it not only in the above disorders, but in mania, hæmoptoe, the dry cough, but universally wherever an anodyne is wanting to quiet the nervous irritations: beginning with a single grain of the extract, and increasing the dose gradually to five grains; some more daring practitioners proceed as far as fifteen grains; but in general perhaps it is more adviseable to continue the use of the medicine longer than to give it in very large doses. It has been even administered in a cataract, to the quantity of two grains, mixed with mercurius dulcis. The leaves bruised and fried have been applied with effect to the piles, and in muscular spasms. Like other narcotics they assist in softening indurations of the glands. An oil expressed from the seeds is used outwardly as an anodyne: and the common people sometimes smoke them for the tooth-ach; or put a piece of the root boiled in milk at the root of the tooth.] The roots also, cut in pieces and strung like beads, are used for anodyne necklaces to hang about children's necks, to prevent fits, and cause the teeth to breed easily. [Some give a decoction of Henbane in clysters to assuage the pains of the intestines, but this is dangerous^e. In general it is a medicine not to be trifled with, or taken without good advice.

Henbane is a native of most parts of Europe, in waste places, particularly near towns and villages, whence Linneus remarks that it associates with mankind, like the magpie, and some other birds. It is generally known by its peculiar fetid odour. The English name Henbane is probably derived from a notion of its being noxious to poultry; but whether this notion be well founded or not, I have not had any opportunity of knowing.

In German it is *Bilsenkraut*. In Dutch, *Bilsenkruid*. In Danish, *Bulme, Honsbane*, &c. In Swedish, *Bolmört, Honsbale*. In French, *la Jusquiame*. In Italian, *Giusquiamo, Fava porcina*. In Spanish, *Belena, Veleno*. In Portuguese, *Miemandro, Velenho, Yosciamo*. In Russian, *Belena*.

A variety of this was found by Professor John Martyn, near the Castle at Cambridge, about the year 1729, with the corolla and anthers of a pure brimstone colour, without the least tinge of purple. The seeds being sown in the botanic garden at Chelsea, produced the very same variety^f.

Henbane is a biennial plant, forming the root and lower leaves the first season, and the stem with the fructification the second. It flowers in June.]

2. This rises with a branching stalk two feet high. The lower leaves are regularly cut on both sides into acute segments, which are opposite, but the upper leaves are entire. The flowers grow at the end of the stalk in bunches. They are of a worn-out red colour, and shaped like those of the common sort, but their tubes are swollen.

[The whole plant is smooth^g. It resembles common Henbane, but the stem-leaves are ovate, repand, more smooth above; the floral leaves ovate, sessile, entire. Flowers on a very short peduncle. Corolla bell-shaped, red, beautifully netted with dark veins^h.

Native of Egypt, of Syria near Aleppo, according

to Rauwolff, and of the island of Crete or Candia, according to Clusius. It is an annual plant, flowering in July, and was cultivated by Mr. Miller in 1731.

This species was left out in the twelfth, thirteenth, and fourteenth editions of *Systema Vegetabilium*, but is restored by Reichard, Retzius and others; unless it be the same with *H. muticus*, n. 5. and *H. Datura* of Forskallⁱ.

3. White Henbane resembles the Black in most circumstances, but the leaves are more rounded or obtuse, petioled, sinuate, very soft, bearded with white hairs, as is also the stem. Flowers fewer, the lower ones on longer peduncles, but the upper flowers have very short ones. Calyx green, five-toothed, hairy. Throat of the corolla longer than in the first sort; limb revolute, five-cleft, with unequal segments^k. Capsule clothed with the calyx, membranaceous, knobbed with the protuberant seeds, ovate, ventricose at bottom, marked with a depressed streak on each side. Receptacle fungose, scrobiculate, ovate-oblong, plano-convex, fixed on both sides to the partition. Seeds very numerous, small, compressed a little, incurved or kidney-form, closely scrobiculate, whitish ash-coloured^l.

Native of the South of Europe. Annual. Flowering in August. Cultivated here in 1570^m.

The corolla varies with the base dark purple, or green. Hence Miller has made two species, *major* and *albus*;] the first having the flowers on short peduncles, of a pale yellow colour, with very dark purple bottoms, and growing naturally in the islands of the Archipelago: this is *H. major*, albo similis, umbilico floris atro-purpureo. *Tournef. cor.* The second has the flower in larger bunches, sitting very close on the ends of the branches, of a greenish yellow colour, with green bottoms. This is the white Henbane of the South of Europe. *H. major*, albo similis, umbilico floris virenti. *Jussieu*.

4. This is a perennial plant (biennial), with weak stalks, which require a support. Leaves roundish, acutely indented on their edges, and on pretty long foot-stalks. The flowers come out at each joint of the stalk; they are large, and of a bright yellow, with a dark purple bottom. The style is much longer than the corolla. [The stem is hairy, and about a foot high. The petioles are very hairy. Leaves lobed, toothletted. Peduncles at the side of the petioles, erect with the flower, but quite bent down when in fruit. The outer lobe of the corolla is larger than the rest, and the lower sinus is cut beyond the limb, as in the *Teucriums*, and there the purple stamens with the very long pistil issue and hang downⁿ.

Native of Candia, and other parts of the Levant.] It flowers most part of the summer, and sometimes ripens seeds in the autumn. [Cultivated in 1640, by Parkinson^o.

Prosper Alpinus and others make two varieties of this, differing only in size and the shade of colour in the corolla.

5. Stem a foot high, the thickness of a finger, erect, roundish, subpubescent; branches axillary, shorter. Leaves alternate, obtusely sinuated; acute, even, quite entire, palish, with pubescent petioles. Floral leaves subpetioled, ovate or ovate-oblong, entire, one or two to a flower alternately. Raceme of flowers all directed one way, curved in at top. Calyx bell-funnel-form, with broadish segments, not at all spiny. Corolla a little longer than the calyx, but not broader, subcampanulate, the three upper segments broader, the two lower smaller, deeply separated; the colour on the outside at first green, then whitish; on the inside very dark purple, with the two lowest segments whitish; but finally the whole corolla becomes white and unspotted. Stamens declining, purple, a little longer than the corolla. Pistil longer, declining. Native of Egypt and Arabia. Biennial^p.]

Miller describes his minor as having a smaller stalk than the preceding, with joints farther distant; the

^d Withering.

^e Allioni.

^f Tourn. par. engl. edit. 2. 26.

^g Gron. orient.

^h Linn. spec.

ⁱ Retz. obs. 5.

^k Krockner.

^l Gartner.

^m Hort. kew. from Lobel.

ⁿ Linn. spec.

^o Hort. kew.

^p Linn. mant.

leaves roundish, and deeply indented in obtuse segments, standing upon pretty long foot-stalks; the flowers coming out singly from the side of the stalks, at a good distance from each other; of a yellow colour, with dark bottoms. It was brought from the Levant by Tournefort.

6. [This is an annual plant, a hand in height. Stem oblique, brittle, undivided, having long hairs. Lower leaves entire, upper oblong, toothed, alternate, sparingly hairy, on petioles of the same length with themselves. Peduncles short on the outmost stem, each from the axil of two opposite leaves. Calyxes turbinate, ten-angled, almost the length of the corolla, and broader than its tube, spiny at top. Corolla yellow, with a dark throat, divided on the lower side beyond the limb. Stamens declining^a.

Gouan says, that the root-leaves in the wild plants are always bipinnatifid, with the segments sharply toothed: but that it occurs also with lanceolate leaves, if the seeds be sown very late, or be cultivated in a poor lean soil.

Native of Persia. Cultivated in 1691 by Compton, Bishop of London, at Fulham. It flowers in July¹.

7. Root perennial. Stems a foot high, simple, erect, round, rough-haired. Leaves alternate, petioled, cordate, lurid-green, veined, rough-haired underneath, the upper ones gradually larger. Flowers in bundles, terminating, peduncled. Calyxes very short, five-toothed, rough-haired. Corollas purplish, funnel-form, upright. Stamens a little shorter than the corolla, converging. Style the same length with the corolla. Stigma capitate, emarginate, whitish. It flowers early in spring. Native of Siberia².

It was introduced here in 1777, by Messrs. Gordon and Græffer³.

The description is repeated in the appendix to Linneus's Species plantarum, p. 1668. under *Pulmonaria hirta*.

8. Root perennial, transverse, knobbed, thick, irregular, branched, flexuose, the thickness of the human thumb. Stem herbaceous, annual, upright, round, smooth, (scarcely more than a foot high, according to Linneus and Jacquin, but even three feet in height, according to Scopoli), the thickness of the human finger, trifid and bifid, with dichotomous branches, as in *Atropa Belladonna*. (Branches only two, according to Linneus, spreading, and entirely simple: or, as Jacquin says, subtrichotomous, with a groove running down from the leaves.) Leaves ovate and oblong, the length of the human finger; the lower quite entire; the upper frequently moderately sinuate or repand. (According to Linneus, petioled, naked, somewhat wrinkled, spreading; on the stem alternate, solitary; under the forkings in threes, two of which approximate; on the branches alternate, but two together on the same tooth or base, one of which is a little less than the other. According to Jacquin, they are subovate or lanceolate, entire except the lower ones, which in gardens at least are sinuate-toothed in front, veined, wrinkled, decurrent; the lower ones opposite, the rest scattered.) Peduncles one-flowered, pendulous, from the axils; weak, two inches long. Calyx smooth, five-toothed, permanent, wider than the fruit, and as it were inflated: (bell-shaped, five-cleft, awnless. *Linn.*) Corolla of the same shape and colour as in *Atropa Belladonna*: (three times the length of the calyx, bell-shaped, slightly five-cleft, blunt, on the outside ferruginous, with a few pale streaks, within yellow. *Linn.*—oblong, large, five-toothed, narrowing at the base into a short tube, yellowish purple, deciduous. *Jacqu.*) Stamens attenuated, villose, (approximating to the style, bent down towards the lower side. *Linn.*—awl-shaped, unequal, upright, hirsute, shorter than the petal. *Jacqu.*) Anthers two-celled, pale yellow, (oblong, incumbent, large. *Jacqu.*) Style deciduous, longer than the stamens; terminated by a capitate, subbifid, pulvinate stigma, having a three-cornered aperture at top. Germ sessile, smooth,

(ovate, blunt, sitting on the receptacle, with five nectareous toothlets round the base of it. *Jacqu.*) Capsule smaller than the calyx, five lines in diameter, not easily opening; the lid marked with two cruciform lines; (falling with the peduncle and calyx, and after it has fallen, opening transversely. *Jacqu.*—subglobular, coriaceous, rufescent, cut round almost in the middle. *Gartn.*) Seeds in each cell from twenty to twenty-four, fixed to an orbiculate receptacle⁴; kidney-form, rather large, elegantly dotted very closely in rows, with little holes, and of a very pale yellow colour⁵. It differs from *Atropa*, which it very much resembles in habit, in the calyx, stigma, and nectareous teeth of the receptacle, but principally in its capsular fruit.

Frequent in the woods about Idria in Friuli, flowering about the middle of April⁶. It flowers with us in May; and was introduced in 1780, by Mr. Daniel Grimwood⁷.

Jacquin, thinking that this plant is generically distinct from *Solanum*, with which the old authors had placed it; from *Atropa*, wherein Scopoli had put it in the first edition of his *Flora Carniolica*, and from *Hyoscyamus*, made a new genus of it under the name of *Scopola*, from Giov. Ant. Scopoli, physician at Idria, and afterwards professor at Pavia: but he with singular modesty declined the honour in the following words. "Veruntamen merita mea in re herbaria non ea esse fateor, quæ me viris illis adnumerare queant, quorum cognomina novis plantarum generibus data fuerunt. Alii sunt his honoribus longe digniores." Had only such received this honour, the names of plants of this sort would have been very few. Modern botanists, however, have agreed to consider this plant as a species of *Hyoscyamus*; and it has been reserved to Dr. Smith to name a plant from this amiable and skilful naturalist.]

PROPAGATION AND CULTURE.

All these are biennial plants, which perish soon after they have perfected their seeds. They flower in June and July, and their seeds ripen in the autumn, which, if permitted to scatter, will produce plenty of the plants the following spring; or if the seeds are sown at that season, they will succeed much better than in the spring; for when they are sown in spring, the plants seldom come up the same year. They are all hardy except the second sort, and require no other culture but to keep them clean from weeds, and thin the plants where they are too close. The second sort should have a warm situation and a dry soil, in which it will live much better through the winter than in rich ground.

The fourth sort is a perennial plant. If the seeds are sown in pots as soon as they are ripe, and placed under a hot-bed frame in winter, the plants will come up in the spring; but if they are kept out of the ground till the spring, they rarely succeed. This sort will continue several years, if it be kept in pots and sheltered in winter, for it will not live in the open air at that season, but only requires to be protected from frost; therefore if these plants are placed under a common hot-bed in winter, where they may enjoy as much free air as possible in mild weather, they will thrive better than when they are more tenderly treated. This sort may be easily propagated by cuttings, which, if planted in a shady border during any of the summer months, will take root in a month or six weeks, and may be afterwards planted in pots, and treated like the old plants.

[*HYOSCYAMUS*. See *Oenothera* & *Pedaliium*.

HYOSERIS. (Ἵος σερῖς, *Swine's Lettuce*, or *Succory*, *Linn.*)

Lin. gen. n. 916. *Schreb. n.* 1242. *Juss.* 169. *Gartn. t.* 160.

Taraxaconastrum. *Vaill. mem. acad.* 1721. 45. 40. 31. 32. 24.

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of *Compositæ Semisiliculosæ*.—*Cichoracæ*, *Juss.*

¹ *Linn. mant. & Murr. prodr.*
² *Linn. amoen.*

³ *Hort. kew. from Pluk.*
⁴ *Hort. kew.*

⁵ Scopoli.

⁶ Gartner.

⁷ Hort. kew.

⁸ Scopoli.

GENERIC CHARACTER.

CAL. common cylindric-angular, consisting of about eight leaves, permanent; scales lanceolate, erect, acute, slightly keeled, equal; calyced at the base with fewer, very short, close scales.

COR. Compound, subimbricate, uniform; composed of many hermaphrodite corolllets.

Proper one-petalled, ligulate, linear, truncate, five-toothed,

STAM. Filaments five, capillary, very short. Anther cylindrical, tubular.

PIST. Germ oblong. Style filiform, the length of the stamens. Stigmas two, reflex.

PER. none. The common calyx close or spreading.

SEEDS solitary, oblong, membranaceous, streaked on one side along the middle, almost the length of the calyx.

ESSENTIAL CHARACTER.

Cal. almost equal. Down hairy and calyced. Recept. naked.

SPECIES.

* Stem naked.

1. *Hyoseris foetida*. Stinking *Hyoseris*.
Lin. spec. 1137. Reich. 3. 657. mant. 459. Gouan. hort. 415. Villars dauph. 3. 166.
Lapfana. Hall. belv. n. 5.—foetida. Allion. pedem. n. 749.
Lapfana foetida. Scop. carn. n. 989.
Taraxaconastrum, dentis leonis folio, radice foetida. Vaill. 1721. p. 180.
Leontodontoides alpinus glaber, erysimi folio, radice crassa foetida. Mich. gen. 31. t. 28.
Dens leonis tenuissimo folio. Baub. pin. 126. prodr. 62.—fol. profunde laciniatis, virore splendentibus, foetidus. Mor. hist. 3. 75. n. 8. f. 7. t. 7. f. 7.
Hieracium tertium foetidum. Col. ecphr. 2. 29. t. 31. Raii hist. 247.
Scapes one-flowered, leaves pinnatifid, seeds naked.
2. *Hyoseris radiata*. Starry *Hyoseris*.
Lin. spec. 1137. Reich. 3. 657. Gouan. hort. 415. Sauv. monsp. 300.
Rhagadiolus radiatus. Allion. pedem. n. 835.
Taraxaconastrum dentis leonis folio ad summitatem radiato. Vaill. aët. 703.
Dens leonis minor, foliis radiatis. Baub. pin. 129. prodr. 62. Pluk. phyt. t. 37. f. 2. Park. theat. 780. n. 4. Raii hist. 246.
Scapes one-flowered, leaves smooth, runcinate, with toothed angles, lacinated at top.
3. *Hyoseris lucida*. Shining *Hyoseris*.
Lin. syst. 720. Reich. 3. 658. mant. 108. Vahl symb. 1. 66. Jacqu. hort. 2. t. 150.
Lapfana taraxacoides. Forsk. descr. 145. n. 63.
Dens leonis græcus, foliis erysimi crassis & succulentis. Tournef. cor. 35.
Scapes one-flowered, leaves somewhat fleshy, runcinate, angular, toothed.
4. *Hyoseris scabra*. Rugged *Hyoseris*.
Lin. spec. 1138. syst. 720. Reich. 3. 658. hort. cliff. 386.
Rhagadiolus scaber. Allion. pedem. n. 833.
Taraxaconastrum, erysimi folio, flore minimo. Vaill. aët. 1721. p. 235.
Dens leonis minimus, fol. hirsutis, calycis segmentis a flore delapso erectis & femina complexis. Raii hist. 3. 147.
Hieracium minimum supinum, tragopogoni capitulis. Bocc. mus. 2. 146. t. 106.
Scapes one-flowered, leaves rugged, seeds downy.
5. *Hyoseris virginica*. Virginian *Hyoseris*.
Lin. spec. 1138. Reich. 3. 658. Gron. virg. 60.
Scapes one-flowered, leaves lanceolate, lyrate, smooth.
6. *Hyoseris pygmæa*. Dwarf *Hyoseris*.
Ait. hort. kew. 3. 130.
Scapes one-flowered, leaves spatulate toothed ciliate, calyxes hairy, hairs and cilia forked, down stiped, feathered.
7. *Hyoseris minima*. Least *Hyoseris*.
Lin. spec. 1138. Reich. 3. 658. hort. cliff. 386. fl. suec. n. 707. Hudf. angl. 346. Wither. arr. 856. ed. 3. 690. Lightf. scot. 442. Relb. cant. n. 578. Engl. bot. t. 95. Sauv. monsp. 14.

Pollich pal. n. 753. Fl. dan. t. 201. Krock.

filef. n. 1312. Villars dauph. 3. 164.

H. angustifolia. Tabern. ic. 180.

Lapfana. Hall. belv. n. 4.—minima. Allion. pedem. n. 751.

Hyoseris mascula. Ger. 227. 8. emac. 288. 8.

H. Tabernæmontani & Gerardi. Park. theat. 791. 9.

Raii syn. 173. Pet. brit. t. 15. f. 9.

Hieracium minus folio subrotundo. Baub. pin. 127.

H. minimum. Clus. hist. 2. 142. 2. Raii hist. 229.

Hieracii parva species, Hyoseris angustifolia aspera. Baub. hist. 2. 1025.

Intybus f. Endivia lutea minima, &c. Mor. hist. 3. 53. f. 7. t. 1. f. 8.

Stem divided, naked, peduncles thickened.

* Stem leafy.

8. *Hyoseris Hedypnois*. Branching *Hyoseris*.

Lin. spec. 1138. Reich. 3. 659. Gouan. hort. 416.

Krock. filef. n. 1313. Villars dauph. 3. 165.

Lapfana. Lin. hort. upf. 246. cliff. 387. Sauv. monsp. 83.

Rhagadiolus Hedypnois. Allion. pedem. n. 831.

Rhagadioloides calthæ folio, calyce glabro. Vaill. aët. 1721. p. 202.

Hedypnois annua. Tournef. inst. 478.

Hieracium facie hedypnois. Lob. ic. 239.

H. capitulum inclinans, femine adunco. Baub. pin. 128.

H. florem inclinans. Baub. hist. 2. 1032.

Fruits ovate, smooth, stem branched.

9. *Hyoseris Rhagadioloides*. Nipplewort *Hyoseris*.

Lin. spec. 1139. Reich. 3. 659. Villars dauph. 3. 165.

Lapfana. Hort. upf. 246. n. 6.

Fruits ovate, hairy, stem branched.

10. *Hyoseris cretica*. Cretan *Hyoseris*.

Lin. spec. 1139. Reich. 3. 659. Gært. fruct. 2. 372. Scop. insubr. t. 16? Cavan. hisp. 32.

n. 47. t. 43. Lamarck encycl.

Lapfana. Hort. upf. 246.

Rhagadiolus creticus. Allion. pedem. n. 832.

Hedypnois cretica minor annua. Tournef. cor. 36.

Fruits ovate, rugged, stem branched.

DESCRIPTIONS, &c.

1. Root perennial, single, cylindrical, thick, woody, fetid. Leaves radical, smooth, pinnatifid or runcinate, cut into several triangular segments, which are almost equal and regular, sometimes having a few teeth on the hinder side, terminated as well as the segments themselves by a herbaceous spinule; nerve hairy. From the centre of these spring from six to ten simple, naked flowering-stalks or scapes, a little longer than the leaves, each terminated by a middle-sized flower; yellow above, and red beneath. Calyx calyced, having five or six scales at the base, less by half than the others, which are a little open, smooth, and eight in number; each of these has two florets. Seeds naked, yellowish, somewhat villose. Receptacle villose, flat. The whole plant has a disagreeable smell. It has much resemblance to Dandelion, but the flower is smaller, and of a deeper yellow colour^a.

Native of the mountains of Italy, Dauphiné, Carniola and Switzerland.—Introduced in 1775, by Drs. Pitcairn and Fothergill. It flowers in July^b.

2. The peduncles and rachis of the leaves farinaceous; the lobes imbricately reflexed, toothed on both sides, even. Seeds membranaceous, with a simple sessile egret^c. Allioni remarks, that the seeds in *Hyoseris* are crowned, sometimes with a down, sometimes with awns or scales, but that the outside seeds are naked in most of the species: in this, however, they are all crowned with down.

Native of the South of France, the county of Nice on hills near the coast, and of Spain. It was cultivated here in 1640^d.

Allioni says it is an annual plant. By Linneus, and in the Kew catalogue it is marked as perennial.

3. This resembles the preceding very much, but the leaves are thicker, somewhat fleshy, lucid, and

^a Linn. spec. Scop. Villars, Haller.

^b Hort. kew.

^c Linn. spec.

^d Hort. kew.

more shortly toothed. Scapes purplish, longer than the leaves. Calyx angular. Marginal seeds scarcely downy^c.

According to Vahl, the wild plant, (which has a very different appearance from the cultivated one) is very smooth, a finger's length in height, with the scape a little longer than the leaves. The segments of these are fleshy, oblong, quite entire, or sometimes, but very seldom, having an angle or toothlet on the outside, imbricated, covering the middle of the preceding segment, terminated by a whitish dagger-point. (In the cultivated plant these segments are distinct or remote from each other.) Calyx calyced; scales ovate, the inner ones lanceolate.

Native of the Levant. Introduced in 1770, by Monf. Richard. It flowers from June to August^f.

4. Leaves sublyrate, naked, scarcely rugged, opaque, subciliate; segments subalternate, somewhat toothed, the end one three-lobed and angular. Scapes even, having a pellucid meal scattered over them, fistulous, thickening towards the top, bending to one side. Calyx oblong, squeezed close, hexangular, six-leaved or thereabouts; leaflets lanceolate, slightly keeled, equal; with as many leaflets on the outside covering the base of the calyx. Seeds crowned with a rugged rim, and an awned down^g.

Native of Sicily, the county of Nice, Villafranca, &c. It is annual, according to Allioni.

5. The first root-leaves are ovate, the next lanceolate, the last lyrate, acute and smooth. Scapes three times as long as the leaves. Calyxes quite simple, not imbricated, composed of ten lanceolate leaflets. Corolla deep yellow. Seeds four-cornered, crowned with an entire membranaceous rim, and three or four long bristles besides. Native of Virginia^h.

6. This is an annual plant, native of Madeira, flowering in June and July. Introduced by Mr. Francis Masson in 1778ⁱ.

7. Root annual, small but woody, with a few rigid fibres. Leaves spreading in a circle, bluntly oval, tapering into the foot-stalk, toothed on the sides, entire at the base and summit, when viewed with a glass slightly hairy, particularly at the margins. Stems several, six to nine inches high, naked, round, smooth, reddish and wiry at the bottom, green and hollow upwards, gradually swelling for some distance below the calyx, sometimes simple, but oftener with one, sometimes two branches; these are also rigid and reddish at the base, swelling upwards, and sometimes again branched; before the flowers expand nodding, afterwards erect. Outer scales of the calyx small, dry and withering; inner lanceolate, very acute. Corolla yellow. Seeds oval, striated, crowned with the remains of the proper calyx^k. The whole plant is smooth and upright. The florets are truncated, and have commonly five teeth; those in the ray are tinged with purple underneath; they amount sometimes to seventy-six in number in one flower. The calyx has about eleven smaller, and twenty-four larger scales. Receptacle naked. At the origin of the branches, and on the branches themselves, are a few awl-shaped scales or stipules^l.

Native of most parts of Europe in pastures and corn fields in a sandy soil. In Britain not very common. About Hampton Court and in Teddington field; Walthamstow, Essex; near Pershore in Worcestershire; near Norwich; near Gamlingay in Cambridgeshire; Spratton in Northamptonshire. About Forfar, and between Dundee and St. Andrew's in Scotland.

Gerarde calls it Male Swines Succorie; Parkinson, Clusius his least Hawkeweede, Ray, Small Swines Succory or Hawkweed; Hudson, Least Hyoseris or Swine's Succory; Dr. Withering, Small Swines-eye. It flowers in May and June.

8. Root annual. Stems branched, weak, and bending at each joint, whence springs one sessile, smooth, oblong, toothed leaf. Flower yellow, small, nodding;

calyx smooth, firm, hard, angular, open when the seeds are ripe; the central seeds have a hard sessile egret, of simple dusky hairs or bristles^m. Those of the ray have only a rim.

Native of the South of Europe. Cultivated in 1683, by Mr. James Sutherland. It flowers in Juneⁿ.

9. This also is an annual plant. Villars suspects it to be no more than a variety of the preceding; the calyx is villose, and less hard. It is a native of the South of Europe, and was introduced in 1773, by Monf. Richard. It flowers in July and August^o.

10. Root annual, round, fibrous, white within, brown without. Stems several, half a foot high, spreading, somewhat hispid. Leaves oblong, narrower at the base, tooth-runcinate, hispid; stem-leaves alternate at the insertion of the flowers. Flowers solitary, erect, terminating and axillary; peduncles gradually thickening towards the top, fistulous, somewhat compressed. Common calyx composed of near twenty leaflets, with some short scales at the base; when the seed is ripe, hispid, globular and reddish. Proper calyx of each floret very short, ten-parted, permanent. Corollets short, pale yellow, with the apex of the tube villose^p. Receptacle flat, smooth, hollow-dotted. Seeds almost cylindrical, rugged, ferruginous; the inner ones longer, and almost straight; the marginal ones shorter, bowed in, half involved in the calycine leaflets, both downy: down of the ray short, composed of chaffy, toothletted leaflets, which are connate at the base, and almost equal, or of three only shortly awned; down of the disk composed of several short awl-shaped leaflets, and five chaffy ones, ending in a very long toothletted awn^q.

Native of Candia, the county of Nice, and common about Madrid, flowering in May and June; with us in June and July. It was cultivated by Mr. Miller in 1739^r.

Cavanilles is of opinion that Hyoseris cretica of Scopoli is H. Hedypnois of Linneus, because he has figured the fruit smooth, all the seeds with a down, and the flowers three times the size as they are in this species.

Lamarck and Cavanilles refer Hyoseris minima and foetida to the genus Lapsana, because the seeds are naked. Gartner refers Hyoseris radiata to Hedypnois: vol. 2. p. 373. The down or egret being uniform, unequal and sessile. On the contrary he would refer Leontodon hirtum of Linneus to this genus Hyoseris. See Apargia hirta.

PROPAGATION AND CULTURE.

These are all hardy plants, except the sixth, and may easily be propagated from seeds, either sown in the spring, or left to scatter of themselves. The sixth requires the protection of a green-house. They mostly require a dry soil.]

HYPECÖUM. (From *υπηχεω*, *resono*. *Τηχεον* of Dioscorides; Hypecöum of Pliny.)

Lin. gen. n. 171. Schreb. n. 228. Tournef. 115.

Juss. 236. Gertn. t. 115.

Class. 4. 2. Tetrandria Digynia.

Nat. order of Corydales.—Papaveraceæ, Juss.

GENERIC CHARACTER.

CAL. Perianth two-leaved, small; leaflets ovate, acute, erect, opposite, deciduous.

COR. four-petalled: the two outer petals opposite, broader, trifid, obtuse; the two inner alternate with the others, semitrifid; the middle segment concave, compressed, erect.

STAM. Filaments four, awl-shaped, erect, covered by the middle segment of the inner petals. Anthers erect, oblong.

PIST. Germ oblong, cylindrical. Styles two, very short. Stigmas acute.

PER. Silique long, curved inwards, jointed.

SEED solitary in each joint of the pericarp, globular-compressed.

OBS. The stamens of H. erectum seem to be tetradynamous.

ESSENTIAL CHARACTER.

Cal. two-leaved. **Pet.** four, the two outer broader, and trifid. **Fruit** a silique.

^c Linn. spec.

^f Hort. kew.

^g Linn. syst.

^h Linn. spec.

ⁱ Hort. kew.

^k Woodw. Mss.

^l Lightf. & Pollich.

^m Villars.

ⁿ Hort. kew.

^o Ibid.

^p Cavanilles.

^q Gartner.

^r Hort. kew.

SPECIES.

Hypocoum procumbens. *Procumbent Hypocoum.*

Lin. spec. 181. *Reich.* 1. 353. *hort. upf.* 31. *cliff.*

38. *Gertn. fruct.* 2. 164. *Gmel. it.* 2. 197.

Ger. prov. 371. *Mill. fig. t.* 150. *f.* 1.

Hypocoum. *Baub. pin.* 172. *Dod. pempt.* 449.—

legitimum Clusii. Park. theat. 371. 1. *Raii hist.*

1328.—*filiquosum. Baub. hist.* 2. 899.—*latiore*

folio. Tourn. inst. 230. *Garid. aix.* 238.

Cuminum corniculatum, f. Hypocoum Clusii. Ger.

909. *emac.* 1067. 3.

Siliques bowed, compressed, jointed.

2. *Hypocoum pendulum. Pendulous Hypocoum.*

Lin. spec. 181. *Reich.* 1. 353. *hort. upf.* 31. *Sauv.*

monsp. 263. *Ger. prov.* 371. *Pallas it.* 3. 553.

Mill. fig. t. 150. *f.* 2.

H. alterum. Park. theat. 372. 2. *Raii hist.* 1328.—

fil. pendentibus non articulatis bivalvibus incurvis.

Mor. hist. 2. 280.

Hypocoi altera species. Baub. pin. 172.

Cuminum sylvestre filiquatum Ponæ. Dalech. hist.

698.—*Dioscoridis alterum filiquosum. Lob. ic.*

473.—*filiquosum. Ger.* 908. *emac.* 1067. 2.

3. *Hypocoum erectum. Upright Hypocoum.*

Lin. spec. 181. *syft.* 167. *Reich.* 1. 353. *Amm.*

rub. 58. *t.* 9. *Hall. goett.* 229.

Siliques erect, round, torulose.

DESCRIPTIONS, &c.

1. [Root simple, sometimes bifid, long, but annual, having but few fibres. Leaves divided by many incisures, somewhat resembling those of Fumitory, pale green, with a tinge of grayish or glaucous colour, spread on the ground. Stems several, slender, somewhat compressed^a,] naked at bottom, but having two or three small leaves at top, of the same shape and colour with the under ones: from among these leaves come out the peduncles, each sustaining one small yellow flower. [The fruit is a capsule shaped like a filique or pod, long, bowing, compressed and ancipital, jointed with transverse knots, and grooved with longitudinal streaks, many-celled: the cells in a single longitudinal row, and scarcely separating spontaneously. Seeds from ten to twenty, roundish, cut off as it were on one side, compressed like a lens, somewhat wrinkled, dotted in relievo, very dark brown, inserted alternately into the outer and lower angles of the cells^b.

Native of the South of Europe; and cultivated before 1597, by Gerard^c.] It flowers in june and july, and the seeds ripen in august.

2. The second sort has slender stalks, which stand more erect, and the segments of the leaves are longer and much narrower than those of the first; the flowers are smaller, and come out at the divisions of the branches. This flowers and seeds at the same time with the first. [The flowers are yellow, like those of greater Celandine, but less^d. Native of the South of France. Cultivated here in 1640^e. Gerarde calls the first Horned Wild Cumin; and this Coddled Wild Cumin.]

3. This has much the appearance of the second sort in leaf and flower, but the pods grow erect, and are writhed and twisted about. It flowers and seeds at the same time with the others. Ammann received the seeds from Dauria, and Miller from Istria. [The latter cultivated it here before 1759. In *Systema vegetabilium* it is observed that the stamens appear to be tetradynamous.]

The juice of these plants is of a yellow colour, resembling that of Celandine, and is affirmed to have the same effect as opium.

PROPAGATION AND CULTURE.

These plants being all annual are propagated by seeds, which should be sown soon after they are ripe, on a bed of light fresh earth, where they are to remain; for they seldom succeed if transplanted. When the plants come up, clear them from weeds, and thin them to the distance of six or eight inches.

When the seeds are sown in the spring, and the season proves dry, they will not grow the first year;

^a Ray hist.

^b Gartner.

^c Hort. kew.

^d Ray.

^e Hort. kew.

but if the ground be kept clear from weeds, and not otherwise disturbed, the plants will come up the following spring. The seeds will sometimes lie even till the third spring. It is therefore best to sow them in autumn in a warm border; for these will make stronger plants, more likely to perfect seeds than those sown in spring. The seeds, when sown, should be divested of their fungous covering, which adheres so close that it prevents their growing till it is decayed. If the seeds be permitted to scatter, they will frequently come up of themselves, without any care.

These plants are seldom cultivated but by those who are curious in botany; since, however, they require little trouble, they may have a place in large gardens for variety; and as they take but little room, they may be intermixed with other small annual plants in large borders, where they will make a pretty appearance.

[HYPELATE. (So named by Browne, from *υπο* and *ελα* in a fir-tree.)

Lin. gen. Schreb. n. 1588. *Brown. jam.* 208.

Swartz prodr. 61.

Class. 23. 1. *Polygamia Monoecia.*

GENERIC CHARACTER.

* HERMAPHRODITE FLOWERS.

CAL. Perianth five-leaved (seldom four-leaved): *leaflets* ovate, concave, spreading, deciduous: two less than the others.

COR. Petals five, ovate, a little less than the calyx, deciduous; with a nectariferous umbilicus about the germ.

STAM. Filaments eight, spreading, round the base of the germ, the length of the corolla. *Anthers* ovate-cordate.

PIST. Germ globular, superior. *Style* short, upright. *Stigma* bent down, three-sided, three-grooved, acute.

PER. Drupe pulpy, roundish.

SEED. Nut oval, very smooth, with a single kernel.

* *Male flowers, on the same tree, but on a distinct panicle.*

CAL. and COR. as in the Hermaphrodite.

Nectary also as in that; from the middle of this

STAM. Filaments eight, converging at the base, from erect reflex and ascending, broader at the base. *Anthers* ovate-cordate.

PIST. three-cornered rudiment of a germ. Style awl-shaped, very small.

ESSENTIAL CHARACTER.

Cal. five-leaved. *Cor.* five-petalled. *Stigma* bent down, three-cornered. *Drupe* one-seeded.

SPECIES.

1. *Hypelate trifoliata.*

Swartz. prodr. 61. *Brown. jam.* 208. 1.

Cytisus arboreus, foliis obtusis, petiolis alatis. Sloan. jam. 2. 33. *Raii hist.* 3. 473.

DESCRIPTION, &c.

This shrubby tree has several trunks, each as big as the human leg; straight, eight or nine feet high, covered with a smooth cinnamon-coloured bark. The branches rising upright, are all round beset with leaves, coming out at intervals of an inch, three always together, at the end of a green common foot-stalk, a little foliose or flat, with extant narrow *ale*, each an inch long, half as broad near the farther end, where broadest, and round, beginning narrow, and augmenting to the extremity, of a yellowish green colour, very smooth, having one middle rib, and some transverse ones^a.

Browne observes, that it is full of slender branches, and furnished with many leaves of the same texture and grain with those of *Lignum-vitæ*, but remarkably different both in form and disposition. He had never seen the fruit in a perfect state.

Native of Jamaica, where it is very common in the low lands.

HYPERICOIDES. See *Ascyrum* and *Hypericum*.]

HYPERICUM. (*Υπερίκον* of *Dioscorides*. *Υπερίκων*, *Nicand. in alexiph.*—*Hypericum* of *Pliny*.—From *υπερ*, *supra*, and *εικων*, *imago*. *Linn.* *Androsæum*, *q. ανδρος αιμα*, because it tinges the fingers with red. *Ascyrum*, *q. ασχυρον*, not hard, very soft.)

^a Sloane.

H Y P

Lin. gen. n. 902. Schreb. n. 1224. Gertn. t. 62.
 Tournef. t. 131. Juss. 255. Androsæmum.
 Tournef. 128. Gertn. 59. Ascyrum. Tournef.
 131.
 Class. 18. 4. Polyadelphia Polyandria.
 Nat. order of *Rotaceæ*.—*Hyperica*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted; segments subovate, concave, permanent.

COR. Petals five, oblong-ovate, obtuse, spreading, wheel-shaped, according to the sun's apparent motion.

STAM. Filaments numerous, capillary, united at the base in five or three bodies. Anthers small.

PIST. Germ roundish. Styles three, (sometimes one, two or five) simple, distant, the length of the stamens. Stigmas simple.

PER. Capsule roundish, with the same number of cells as there are styles.

SEEDS very many, oblong.

OBS. Ascyrum Tourn. has five styles, with simple seeds.

Hypericum T. has three styles, with a membranaceous pericarp.

Androsæmum T. has three styles, with a soft coloured pericarp.

ESSENTIAL CHARACTER.

Cal. five-parted. Pet. five. Filam. many, connected at the base in five bundles.

(Cal. five-leaved. Pet. five. Neet. none. Capsule. Hort. kew.)

SPECIES.

* With five styles.

1. *Hypericum balearicum*. Warty St. John's-wort.

Lin. spec. 1101. Reich. 3. 589. hort. cliff. 380.

Mill. fig. t. 54. Curt. magaz. 137.

H. f. Ascyrum frutescens, magno flore. Magn. char. 260.

Myrtocistus balearica Pennei in Ger. herb. 1098.

M. Thomæ Pennei Angli. Ger. 1097. f. 4. emac. 1279. 16.

M. Pennæi. Clus. hist. i. 68. Park. theat. 665. f. 12.

Cistus myrtifolius balearicus Pennæi. Raii hist. 1011. Stem shrubby, leaves and branches warty.

2. *Hypericum kalmianum*. Virginia St. John's-wort.

Lin. spec. 1101. Reich. 3. 589. Du Roi herb. 1. 310.

H. bartramium. Mill. dict. n. 10.

Stem shrubby, leaves linear-lanceolate.

[3. *Hypericum cayanense*. Cayenne St. John's-wort.

Lin. syst. 699. ed. 13. 582. Reich. 3. 589. suppl.

343. mant. 277. Jacqu. amer. 213. ed. 2. 105.

Corollas bearded, calyxes striated, leaves ovate, stem shrubby.

4. *Hypericum bacciferum*. Berry-bearing St. John's-wort.

Lin. syst. 700. ed. 13. 582. Reich. 3. 590. suppl. 344. mant. 277.

Coapia. Marcgr. bras. 96. Pif. bras. 126.

Corollas bearded, calyxes even, leaves ovate, stem shrubby.]

5. *Hypericum calycinum*. Great-flowered St. John's-wort, or Tutsan.

Lin. syst. 700. Reich. 3. 590. mant. 106. Giseke

ic. fasc. 1. t. 18. Ait. hort. kew. 3. 103. Curt.

magaz. 146.

H. Ascyron. Mill. dict. n. 7.

Androsæmum constantinopolitanum flore maximo.

Wheler itin. 205. fig. Raii hist. 1017.

A. fl. et theca quinqucapsulari omnium maximis.

Mor. hist. 2. 472.

Flowers solitary, stem suffruticose, branched, calyxes obovate, very blunt, leaves distich, oblong.

[6. *Hypericum pyramidatum*. Pyramidal St. John's-wort.

Ait. hort. kew. 3. 103.

Flowers subpanicled, stem slightly four-cornered, herbaceous, branched, calyxes ovate, acute.

7. *Hypericum alternifolium*. Alternate-leaved St. John's-wort.

Vahl symb. 2. 85. t. 42.

Flowers axillary, solitary, leaves lanceolate, alternate, stem shrubby.

H Y P

8. *Hypericum syriacum*. Syrian St. John's-wort.

H. alternifolium. Billardiere ic. syr. 2. 17. t. 10.

Calyxes leafy, stem herbaceous, leaves alternate, ovate, acute.

9. *Hypericum guineense*. Guinea St. John's-wort.

Lin. syst. 700. Reich. 3. 591. suppl. 344. diff. de Hyper. 4. t. 1. f. 1.

Flowers subumbelled, stem shrubby, branches round, leaves ovate, acute.

10. *Hypericum petiolatum*.

Lin. syst. 700. suppl. 345. Lour. cochinch. 472.

Stem arboreous, leaves ovate.

11. *Hypericum patulum*.

Lin. syst. 700. Thunb. jap. 295.

Flowers solitary, terminating, stem frutescent, lax, leaves ovate, rolled back at the edge.

12. *Hypericum Ascyron*.

Lin. spec. 1102. syst. 700. Reich. 3. 591. hort.

upf. 236. cliff. 380. Gmel. sib. 4. 178. t. 69.

Ascyrum magno flore. Bauh. pin. 280. prodr. 130.

Stem four-cornered, herbaceous, erect, simple, leaves even, quite entire.]

** With three styles.

13. *Hypericum Androsæmum*. Common Tutsan.

Lin. spec. 1102. Reich. 3. 592. hort. upf. 237.

cliff. 380. Hudf. angl. 332. Wither. arr. 812.

ed. 3. 663. Curt. lond. 3. 48. 206. Lightf. scot.

415. Villars dauph. 3. 495. Krock. files. n.

1228.

Androsæmum. Dod. pempt. 78. 2. Lob. obs. 357. 3.

ic. 1. 632. 1. Blackw. herb. t. 94.—maximum fru-

tescens. Bauh. pin. 280.—bacciferum. Mor. hist.

f. 5. t. 6. f. 12.—vulgare. Park. theat. 576. 1.

Gertn. fruct. 1. 282. t. 59. Raii hist. 1020.—

officinale. Allion. pedem. n. 1440.

H. maximum *Androsæmum* vulgare dictum. Raii

syn. 343. Petiv. brit. t. 60. f. 9.

Clymenum Italarum. Ger. 435. emac. 543. 1.

Fruits berried, stem shrubby, ancipital.

14. *Hypericum olympicum*. Olympian St. John's-wort.

Lin. spec. 1102. Reich. 3. 592. hort. cliff. 380.

Mill. fig. t. 151. f. 1. Lour. cochinch. 471?

H. montis Olympi. Wheler itin. 22. Raii hist.

1017. Dill. elth. 182. t. 151. f. 183.

H. orientale flore magno. Tournef. cor. 19.

Calyxes acute, stamens shorter than the corolla, stem shrubby.

[15. *Hypericum foliosum*. Shining St. John's-wort.

Ait. hort. kew. 3. 104.

Stamens the length of the petals, calyxes lanceolate, acute, leaves oval-oblong, sessile, smooth.

16. *Hypericum floribundum*. Many-flowered St. John's-wort.

Ait. hort. kew. 3. 104. Comm. hort. 2. 135. t. 68.

Pluk. phyt. t. 302. f. 1.

Calyxes ovate, acute, subciliate, stamens shorter than the corolla, leaves lanceolate-elliptic, stem shrubby.

17. *Hypericum arborecens*. Tree St. John's-wort.

Vahl symb. 2. 86. t. 43.

Corollas and calyxes even, smooth, leaves elliptic, racemes

brachiate, stem arborecens.

18. *Hypericum gramineum*. Grass-leaved St. John's-wort.

Forst. fl. austral. n. 281. Vahl symb. 2. 86.

Stem herbaceous, four-cornered, dichotomous, leaves ob-

long-parabolic (ovate-lanceolate).

19. *Hypericum chinense*. Chinese St. John's-wort.

Retz. obs. 5. 27. n. 73.

Peduncles axillary, two-flowered, leaves ovate-lanceolate,

quite entire.

20. *Hypericum cochinchinense*. Cochinchinese St. John's-

wort.

Lour. cochinch. 472.

Peduncles axillary, five-flowered or thereabouts, leaves subpetioled, very close together, stem arboreous.

21. *Hypericum petiolatum*.

Lin. spec. 1102. Reich. 3. 592.

Leaves ovate, petioled, quite entire, tomentose underneath, stem shrubby, four-cornered, compressed.]

22. *Hypericum canariense*. Canary St. John's-wort.

Lin. spec. 1103. Reich. 3. 592. hort. cliff. 381.

Mill. dict. n. 4.

Calyxes blunt, stamens shorter than the corolla, stem shrubby.

- [23. *Hypericum elatum*. Tall St. John's-wort.
Ait. hort. kew. 3. 104.
Calyxes lanceolate-ovate acute, stamens longer than the corolla, leaves ovate-oblong, stem shrubby.]
24. *Hypericum hircinum*. Stinking Shrubby St. John's-wort.
Lin. spec. 1103. Reich. 3. 593. hort. cliff. 331. upf. 237. Dill. elth. 182. t. 151. f. 181, 182.
Androsæmum foetidum capitulis longissimis filamentis donatis. Baub. pin. 280.
A. foetidum. Park. theat. 576. f. 4. Raii hist. 1017.
Tragium. Clus. hist. 2. 305. Baub. hist. 3. 385.
Stamens longer than the corolla, stem shrubby ancipital.
- [25. *Hypericum ægypticum*. Egyptian St. John's-wort.
Lin. spec. 1103. syst. 700. Reich. 3. 599. diff. de Hyper. t. 1. f. 3.
Nectaries of the petals lanceolate, stems suffruticose compressed.]
26. *Hypericum orientale*. Oriental St. John's-wort.
Lin. spec. 1103. Reich. 3. 593.
H. orient. ptarmicæ foliis. Tournef. cor. 18. itin. 2. 97. t. 97. ed. oct. 3. 64.—4° 2. p. 219. t. 220.
Stipules reflex, leaves oblong toothletted crenate-
27. *Hypericum scabrum*. Rugged St. John's-wort.
Lin. spec. 1104. Reich. 3. 593. amoen. 4. 287.
H. orientale. caule aspero purpureo. Tournef. cor. 19.
Stem round suffruticose muricated, leaves oblong.
28. *Hypericum repens*. Creeping St. John's-wort.
Lin. spec. 1103. Reich. 3. 593. amoen. 4. 287. Tournef. cor. 19.
Stem round creeping, leaves lanceolate-linear obtuse.
29. *Hypericum prolificum*. Proliferous St. John's-wort.
Lin. syst. 701. Reich. 3. 593. mant. 106. Murr. in comm. gott. 1780. p. 22. t. 7. Gron. virg. 112.
Primordial flowers sessile, stem ancipital shrubby, leaves lanceolate-linear.
30. *Hypericum ericoides*. Heath-leaved St. John's-wort.
Lin. spec. 1104. Reich. 3. 594. Pluk. phyt. t. 93. f. 5.
H. tomentosum lusitanicum minimum. Tournef. inst. 256.
Leaves linear imbricated.
31. *Hypericum canadense*. Canadian St. John's-wort.
Lin. spec. 1104. Reich. 3. 594.
Leaves linear-lanceolate, stem herbaceous quadrangular, pericarps coloured, twice as long as the calyx.
32. *Hypericum virginicum*. Virginian St. John's-wort.
Lin. spec. 1104. syst. 701. Reich. 3. 594. mant. 455.
Gardenia Coldenia. Aët. edinb. vol. 2. (1756) p. 2.
Flowers nine-stamened, stem round, leaves ovate embracing.
33. *Hypericum mexicanum*. Mexican St. John's-wort.
Lin. syst. 701. Reich. 3. 594. suppl. 345. diff. de Hyper. 5. f. 2.
Branches simple, leaves imbricate ovate.
34. *Hypericum lævigatum*. Smooth St. John's-wort.
Ait. hort. kew. 3. 106.
Leaves ovate somewhat stem-clasping, calycine leaflets ovate acute, panicle trichotomous, middle flower sessile.
35. *Hypericum reflexum*. Reflex-leaved St. John's-wort.
Lin. syst. 701. suppl. 346.
Leaves sessile lanceolate approximating reflex, branches tomentose, panicle terminating.]
36. *Hypericum quadrangulum*. Square-stalked St. John's-wort or St. Peter's-wort.
Lin. spec. 1104. Reich. 3. 595. hort. cliff. 380. fl. succ. n. 679. Hudf. angl. 334. Wither. arr. 813. ed. 3. 663. Curt. lond. 4. 52. 231. Lightf. scot. 416. Relb. cant. n. 556. Hall. helv. n. 1038. Scop. carn. n. 943. Neck. gallob. 318. Leers herb. n. 593. Pollich pal. n. 716. Flor. dan. t. 640. Villars dauph. 3. 496. Krock. files. n. 1229. Crantz. austr. 98. D'Asso arag. 739.
H. vulgare minus, caule quadrangulo, foliis non perfoliatis. Baub. pin. 279.
H. Ascyron dictum, caule quadrangulo. Baub. hist. 3. 382. icon transpos. p. 344. Raii syn. 344. Tourn. inst. 255. par. 1. 180. engl. edit. 2. 30. Garid. aix. 238.
H. in dumetis nascens. Trag. 73.
Ascyrum. Dod. pemp. 78. 1. Matth. 937. Lob.
- obs. 216. ic. 399. 1. Dalech. hist. 1155. Casalp. 385. Ger. 434. emac. 542. Raii hist. 1019. Petiv. brit. t. 60. f. 11.—vulgare. Park. theat. 575. —caule quadrangulo. Mor. hist. f. 5. t. 6. f. 10.
Leaves ovate with pellucid dots, stem quadrangular herbaceous.
37. *Hypericum perforatum*. Common or perforated St. John's-wort.
Lin. spec. 1105. syst. 701. Reich. 3. 595. hort. cliff. 380. fl. succ. n. 680. mat. med. 177. Woodv. med. bot. 29. t. 10. Hudf. angl. 333. Wither. arr. 813. ed. 3. 644. Lightf. scot. 416. Curt. lond. 1. 57. Engl. bot. 295. Relb. cant. n. 554. Gärtner. fruct. 1. 300. Hall. helv. n. 1037. Scop. carn. n. 944. Gmel. sib. 4. 179. n. 4. Pollich pal. n. 717. Leers herb. n. 595. Allion. pedem. n. 1429. Villars dauph. 3. 495. Krock. files. n. 1230. Fl. dan. t. 1043. Mill. illustr. Blackw. herb. t. 15.
H. officinarum. Crantz. austr. 99.
Hypericum. Dod. pempt. 76. 1. Brunfels. 3. 81. Matth. 936. Fuchs. 831. Lob. obs. 216. 1. ic. 1. 398. 1. Besl. eyf. æst. 8. t. 10. f. 3. Ger. 432. 1. emac. 539. 1. Raii hist. 1018. syn. 342. Petiv. brit. t. 60. f. 5.—vulgare. Baub. pin. 279. Park. theat. 573. 1. Mor. hist. f. 5. t. 6. f. 1. Neck. gallob. 319.—f. Perforata, &c. Baub. hist. 3. 381. Trag. 72. 1.
Stem ancipital, leaves blunt with pellucid dots.
- [38. *Hypericum dubium*. Imperforate St. John's-wort.
Leers herb. n. 594. Engl. bot. 296. Wither. arr. 664.
H. delphinense. Villars dauph. 3. 497. t. 44.
Stem imperfectly four-edged, leaves blunt without pellucid dots, calycine leaflets elliptical.]
39. *Hypericum humifusum*. Trailing St. John's-wort.
Lin. spec. 1105. Reich. 3. 596. fl. succ. n. 681. Hudf. angl. 332. Wither. arr. 814. ed. 3. 665. Lightf. scot. 418. Curt. lond. 3. 50. 162. Relb. cant. n. 552. Hall. helv. n. 1039. Neck. gallob. 319. Pollich pal. n. 718. Fl. dan. t. 141. Allion. pedem. n. 1436. Villars dauph. 3. 504. Krock. files. n. 1232.
H. minus. Dod. pempt. 76. 2.—supinum. Park. theat. 572. Raii hist. 1019. syn. 343. Petiv. brit. t. 60. f. 8.—sup. glabrum. Ger. emac. 541. 4.—minus sup. vel sup. glabr. Baub. pin. 279.—minimum sup. Baub. hist. 3. 386. 1.—septentrionale. Lob. ic. 1. 400. 1. Mor. hist. 2. f. 5. t. 6. f. 3.—sup. 3. minimum. Clus. hist. 2. 181. 3.—exiguum & primum. Trag. 72. 2.
Flowers axillary solitary, stems ancipital prostrate filiform, leaves smooth.
40. *Hypericum crispum*. Curled-leaved St. John's-wort.
Lin. syst. 701. Reich. 3. 596. mant. 106. Bocc. mus. 2. 31. t. 12.
H. triquetrifolium. Turr. farf. 12.
H. folio brevior. Baub. pin. 279.
H. fol. parvis crispis f. sinuatis, ficulum. Raii hist. 1018.
Stem round, leaves sessile lanceolate waved and toothed at the base.
41. *Hypericum linariifolium*. Toadflax-leaved St. John's-wort.
Vahl symb. 1. 65.
H. lusitanicum linariæ folio. Tournef. inst. 256.
Calyxes ferrate-glandular, stem round upright, leaves linear blunt smooth.
42. *Hypericum montanum*. Mountain St. John's-wort.
Lin. spec. 1105. Reich. 3. 597. fl. succ. n. 683. Hudf. angl. 333. Wither. arr. 815. ed. 3. 666. Lightf. scot. 418. Sibth. oxon. n. 665. Hall. helv. n. 1042. Pollich pal. n. 716. Leers herb. n. 596. Crantz. austr. 99. n. 6. Fl. dan. t. 173. Villars dauph. 3. 498. Krock. files. n. 1233.
H. elegantissimum non ramosum, folio lato. Baub. hist. 3. 383. 2. Raii hist. 1021. syn. 343. Petiv. brit. t. 60. f. 7. Tourn. par. 1. 18. engl. ed. 2. 29.
H. in dumetis nascens primum. Trag. 73. 3.
Androsæmum campoclarense. Col. ecphr. 1. 73. t. 74. 1.
Ascyrum. Fuchs. hist. 74.—f. H. bifolium glabrum

- non perforatum. *Baub. pin.* 280. *Mor. hist. f.* 5. t. 6. f. 9.
Calyxes acute serrate-glandular, stem round upright, leaves oblong smooth embracing sharpish.
43. *Hypericum barbatum.* Bearded-flowered St. John's-wort.
Lin. syst. 701. *Reich.* 3. 597. *diff. de Hyper.* 6. *Jacqu. austr.* 3. t. 259. *Allion. pedem. n.* 1435.
H. Richeri. Villars dauph. 3. 501. t. 44.
Calyxes and petals ciliate and dotted, leaves dotted.
44. *Hypericum glandulosum.* Glandulous St. John's-w.
Ait. hort. kew. 3. 107. *Vahl symb.* 2. 86.
Calyxes serrate-glandular, leaves lanceolate glandular at the edge, stem shrubby.
45. *Hypericum hirsutum.* Hairy St. John's-wort.
Lin. spec. 1105. *Reich.* 3. 598. *hort. cliff.* 380. *Fl. suec. n.* 682. *Huds. angl.* 333. *Wither. arr.* 816. *ed.* 3. 666. *Curt. lond.* 3. 49. 182. *Lightf. scot.* 419. *Relb. cant. n.* 555. *Hall. helv. n.* 1043. *Scop. carn. n.* 945. *Gmel. fib.* 4. 178. n. 2. *Leers herb. n.* 597. *Pollich pal. n.* 720. *Krock. files. n.* 1234. *Villars dauph.* 3. 499. *Fl. dan. t.* 802.
H. villosum. Crantz. austr. 96.
H. vill. erectum, caule rotundo. Tournef. inst. 255. *par. ed. angl.* 2. 32.
H. Androsæmum. Baub. hist. 3. 382. 2. *Raii syn.* 343.
H. majus f. Androsæmum Matthioli. Park. theat. 576. 2. *Raii hist.* 1020. *Petr. brit. t.* 60. f. 10.
Androsæmum alterum hirsutum. Col. ecphr. 1. 74. f. 75. *Mor. hist. f.* 5. t. 6. f. 11.
A. hirsutum (non synonym.)—& alterum foliis hyperici. Baub. pin. 280.
A. hypericoides. Ger. emac. 543. 2.
Ruta sylvestris hypericoides. Dod. pempt. 77.
Calyxes serrate-glandular, stem round upright, leaves ovate subpubescent.
46. *Hypericum tomentosum.* Woolly St. John's-wort.
Lin. spec. 1106. *syst.* 702. *Reich.* 3. 598. *Gouan hort. monsp.* 402. *Raii hist.* 1020.
H. supinum tomentosum minus vel monspeliacum. Baub. pin. 279.—*sup. toment. alterum. Clus. hist.* 2. 181.
β. H. supin. toment. majus vel hispanicum. Baub. pin. 279. *Raii hist.* 1020.—*sup. tom. hispan. Clus. hist.* 2. 181.
Calyxes serrate-glandular, leaves half-stem-clasping flexuose tomentose, stems prostrate.
47. *Hypericum perforatum.* Perfoliate St. John's-wort.
Lin. syst. 702. *Reich.* 3. 596. *diff. de Hyper.* 5. *Krock. files. n.* 1237.
Stem subcapital, leaves stem-clasping ovate, cyme with sessile flowers.
48. *Hypericum elodes.* Marsh St. John's-wort or St. Peter's-wort.
Lin. spec. 1106. *Reich.* 3. 597. *Huds. angl.* 334. *Wither. arr.* 815. *ed.* 3. 665. *Engl. bot.* 109. *Neck. gallob.* 391.
Afcyrum supinum villosum palustre. Baub. pin. 280. *Park. theat.* 574. *Raii hist.* 1020. *syn.* 344. *Petr. brit. t.* 60. f. 12.
A. supinum elodes. Clus. hist. app. alt. Ger. emac. 542. 2.
Stem round creeping villose, leaves villose roundish.
49. *Hypericum pulchrum.* Elegant St. John's-wort.
Lin. spec. 1106. *Reich.* 3. 599. *mant.* 456. *Huds. angl.* 332. *Wither. arr.* 817. *ed.* 3. 667. *Curt. lond.* 1. 56. *Lightf. scot.* 420. *Relb. cant. n.* 553. *Hall. helv. n.* 1041. *Pollich. pal. n.* 721. *Fl. dan. t.* 75. *Krock. files. n.* 1235. *Villars dauph.* 3. 500.
H. pulchrum. Tragi 74. *Baub. hist.* 3. 383. 1. *Ger. emac.* 540. *Raii hist.* 1019. *syn.* 342. *Petr. brit. t.* 60. f. 6.
H. minus erectum. Baub. pin. 279. *Tourn. inst.* 255. *par.* 1. 180. *ed. angl.* 2. 29.
H. minus glabrum erectum pulchrum. Mor. hist. 2. 470.
Androsæmum. Lonic. 1. 130. 2.
Calyxes serrate-glandular, stem round, leaves stem-clasping cordate smooth.
50. *Hypericum nummularium.* Money-wort-leaved St. John's-wort.
Lin. spec. 1106. *Reich.* 3. 599. *Villars dauph.* 3. 503. *Pluk. phyt. t.* 93. f. 4.
H. nummulariæ folio. Baub. pin. 279. *prodr.* 130. *Park. theat.* 572. *Raii hist.* 1019.
Androsæmum supinum saxatile, nummulariæ folio averfa parte rubente. Bocc. mus. 2. 134. t. 91.
Calyxes serrate-glandular, leaves cordate-orbicular smooth.
51. *Hypericum japonicum.* Japanese St. John's-wort.
Lin. syst. 702. *Thunb. jap.* 295. t. 31.
Leaves sessile ovate entire, stem herbaceous four-cornered decumbent at the base.
52. *Hypericum erectum.* Upright St. John's-wort.
Lin. syst. 702. *Thunb. jap.* 296.
Leaves stem-clasping lanceolate acute, stem round herbaceous
53. *Hypericum Coris.* Heath-leaved St. John's-wort.
Lin. spec. 1107. *Reich.* 3. 600. *Gron. orient.* 240. *Hall. helv. n.* 1040. *Curt. magaz.* 178.
Coris lutea. Baub. pin. 280. *Mor. hist. f.* 5. t. 6. f. 4.
C. hypericoides. Baub. hist. 3. 384. *Raii hist.* 1018.
C. Matthioli, & legitima cretica Belli. Park. theat. 570. f. 1, 2.
C. Matthioli. Ger. emac. 544.
Calyxes serrate-glandular, leaves subverticillate.
- *** With two styles.
54. *Hypericum mutilum.*
Lin. spec. 1107. *syst.* 702. *Reich.* 3. 600. *Gron. virg.* 112.
Leaves ovate sessile.
55. *Hypericum fetosum.* Bristly St. John's-wort.
Lin. spec. 1107. *Reich.* 3. 600. *Gron. virg.* 88. *Pluk. alm.* 189.
Leaves linear.
- **** With one style.
56. *Hypericum revolutum.*
Vahl symb. 1. 66.
H. kalmianum. Forsk. arab. 118. n. 469.
Leaves linear-lanceolate rolled back at the base, stamens shorter than the corolla.]
57. *Hypericum monogynum.* Chinese St. John's-wort.
Lin. spec. 1107. *Mill. dict. n.* 11. fig. t. 151. f. 2. *Curt. magaz.* 334. *Thunb. jap.* 297.
H. chinense. Lin. syst. *Reich.* 3. 600.
H. aureum. Lour. cochinch. 472.
Stamens longer than the corolla, calyxes coloured, stem shrubby.

DESCRIPTIONS, &c.

[These are herbs, shrubs or undershrubs, with cylindrical, ancipital or quadrangular stems. Leaves frequently with pellucid dots. Flowers sometimes in cymes, but more frequently in corymbs, with the peduncles often trichotomous and three-flowered, terminating or axillary also^a. Corolla yellow.

This numerous genus is divided by Linneus into four subordinate parts from the number of styles. The predominating number however is three. Jussieu remarks, that it might be split into six genera. 1. *Afcyrum*, (one to twelve) with five styles, and a capsule with five cells; to which may be added Aublet's species from Guiana, t. 311, 312. turgid with a yellow resinous juice, and hence allied to the *Guttiferæ*. 2. *Hypericum* properly so called, (14, &c.) with three styles, and a three-celled capsule, with the pencils of filaments, scarcely united at the base. 3. *Androsæmum*, (13, &c.) with a soft pericarp resembling a berry, almost one-celled, turgid with a blood-red juice. This division has three styles, and in other respects resembles that immediately preceding. 4. *Elodea* of Adanson, (48, &c.) with three styles and a pericarp of three cells, the filaments united up to the middle, the disk of the germ glandular, as are also the claws of the petals. 5. *Knifa* of Adanson, (54, 55.) with two styles, and a two-celled pericarp. 6. *Komana* of Adanson, with one style, or five styles so closely joined as to seem one. (56, 57.)

^a Jussieu gen.

Whatever may be thought of these distinctions, for dividing this natural genus; they will be of considerable use in distinguishing the numerous species.]

1. Warty St. John's-wort rises with a slender shrubby stalk, in this country, about two feet high, but in its native soil it acquires the height of seven or eight feet, sending out several weak branches of a reddish colour, and marked with scars where the leaves have fallen off. Leaves small, oval, waved on their edges, and having several small protuberancies on their under side: they sit close to the branches, half embracing them at the base. Flowers terminating, large, bright yellow. Stamens a little shorter than the petals. Capsules pyramidal, having a strong smell of turpentine, and filled with small brown seeds.

[Linneus observes that the stems are quadrangular, with glandular dots in racemes scattered over them; the leaves flexuose with warty glands at the edge; the flowers solitary. Mr. Curtis however remarks, that the flowers are not always solitary, but frequently form a sort of corymbus.]

This plant was discovered in Majorca by Dr. Thomas Penny, a physician of London, who sent it to Lobel and Clusius, in the year 1580, under the name *Myrtocistus*; from the resemblance of the leaves to Myrtle, and the gummy substance exuding from the plant as in *Cistus*. From that time the plant seems to have been known only from Clusius, whose figure is very indifferent; till about the year 1714, when Mr. Salvadore, an apothecary of Barcelona, went to Majorca in search of plants, found this in great plenty, and sent dried samples of it to England and Holland, some of which having ripe seeds on them were sown; and from these one plant was raised in the Chelsea garden, and another by Boerhaave at Leyden in 1717. From these many plants were raised by cuttings, and distributed to most of the curious gardens in Europe. It has a succession of flowers great part of the year, which renders it valuable. [Gerarde calls it the Reverende D. Penny his *Cistus*; the title of Reverend is omitted by Johnson, and therefore I conclude it was a mistake.]

2. This rises with an upright herbaceous stalk three feet and a half high, sending out several small branches at top, which come out opposite. Leaves oblong, opposite, half-stem-clasping. At the end of each branch is produced one pretty large flower, with a blunt calyx. Stamens equal in length with the petals. Styles so closely joined as to appear but one. Stigmas reflexed.

[Linneus describes it as shrubby, with quadrangular branches. Leaves smooth, like those of Rosemary or Lavender. Flowers in a dichotomous terminating corymb, composed of three or seven flowers. Capsule ovate, the length of the calyx, which is bluntish and lanceolate. Styles five, very slender.—Reichard affirms that it has only three styles.

Native of North America, where it was found by Bartram, and in Virginia by Kalm. It was cultivated by Miller before 1759.

3. This is an upright branching tree, eighteen feet in height. Leaves opposite, petioled, quite entire, rugged, acute, shining, marked with black dots, two or three inches in length. Racemes compound, terminating. Petals white, hirsute within, as in *Gordonia Lasianthus*. Nectarious glands five, ovate, the length of the germ, alternate with the pencils of stamens. Filaments five, divided at top into a pencil. Anthers globular. Fruit a berry, with a fulvous staining juice. Seeds numerous. It should be distinguished from *Gordonia Lasianthus*, which has also a hirsute corolla, but the leaves in this are opposite and quite entire.

Native of Cayenne^b.

4. This is a shrub three fathoms in height, upright and brachiate; with quadrangular branches. Leaves opposite, acuminate, quite entire, somewhat veined, shining, hoary underneath, a span in length; on short, round petioles, channelled above. Flowers terminating, panicled, on short pedicels. Calycine leaflets five, ovate, acute, scarious at the edge, spreading. Filaments in five sets, the base of which is a flat, upright,

pencil-form column. Anthers roundish. Germ ovate, five-cornered. Styles five, upright, permanent. Fruit an ovate acuminate berry, slightly five-cornered, five-celled. Seeds numerous oblong, in a double row. The whole plant abounds in a viscid tough saffron-coloured juice. It has distinct nectaries, like the preceding, alternate with the sets of stamens, from which it is doubtful whether it be distinct^c.—Native of Mexico; and Brasil.]

5. The stalks of the large-flowering Tutfan are slender and incline downwards. Leaves smooth, placed in pairs. Flowers very large, bright yellow. Capsules pyramidal.

[Stems evergreen, branched, red, quadrangular. Leaves ovate-oblong, of a firm consistence, blunt, quite entire, subsessile, three or four times as long as the internodes. Flowers terminating, peduncled, solitary. Calyx membranaceous, with ovate blunt leaflets, the length of the germ, twice as large in the ripe fruit. Corolla twice as long as the calyx. Stamens yellow, shorter than the corolla. Germ red. It has the habit of *H. Androsæmum*^d.

To this we may add from Ray that the stem is not more than a span high, that the petals are bowed or arched inwards, and that the capsules are three times as large as any of the other species.

The stems are only tinged with red in places. The leaves on the young shoots are of a beautiful light green, of a regular ovate form, and half embrace the stem, on the older branches they are of a very dark green and glaucous on the back, rather subsessile, and frequently drawn out more in length. The flowering peduncle is upright, little more than half an inch in length, and has a pair of ovate bractes at its base hollowed like the bowl of a spoon: the fruiting peduncle is near an inch long, and arches downwards, so that the capsule hangs below the horizontal line; it is accompanied with the calyx at the base and the styles at the top, and loses its red colour.

Native of the country near Constantinople. Introduced in 1676, by Sir George Wheler, Bart. It flowers from June to September^e: and some flowers still remain this 28th day of October 1796, on which I am writing this article.

It is very hardy, and increases much by the creeping roots. Like the Periwinkle, it is a plant well adapted to cover a bank, or bare spots under trees, where few other plants will thrive^f.

6. The native country of this is not known. It was cultivated in 1764, by Mr. James Gordon; and flowers in July and August^g.

7. Stem arborescent, with a smooth ash-coloured bark. Branches scattered, round, smooth. Leaves sessile, two or three inches long, scattered, coriaceous, broad-lanceolate, narrower at the base, obscurely veined, very smooth. Peduncles one-flowered, an inch in length, angular, with three small leaflets towards the top, of the same form with the branch-leaves. Calycine leaflets coriaceous, rounded, smooth, one-third of the length of the corolla, even. Petals entire. Germ five-cornered, ovate, acuminate, smooth. Styles reflex.—Found in the East Indies by Koenig^h.

8. This is a glaucous plant. Stem a foot high and more, upright, single or branched; branches alternate, flexuose, one-flowered. Leaves thickish, with impressed dots on both sides. Flowers panicled, on the branches solitary, terminating. Calyx scarcely divided beyond the middle; segments ovate, acuminate, surrounded at the base with leafy scales. Petals ovate, much more produced on one side, concave, coriaceous, with scales on each side at the claw, embracing the alternate petals. Filaments united at the base into five or more sets. Anthers orbiculate, peltate. Styles the length of the stamens.—Found by Billardiere in dry spots, near the desert of Syriaⁱ.

9. This is a shrub with an ash-coloured bark. Branches even, round; on each branchlet two pairs of leaves, the lower pair smaller. Leaves opposite, petioled, acuminate, even, quite entire. Peduncle op-

^b Linn. and Jacq.

^c Linn.

^d Ibid.

^e Hort. kew.

^f Curtis.

^g Hort. kew.

^h Vahl.

ⁱ Billard.

posite, by the side of the upper pair of leaves, spreading, the length of the leaf, bifid or trifid, many-flowered, subumbelled. Calycine segments lanceolate. Petals upright, spreading above the middle. Nectary of five ovate glands. Filaments short, united at the base in five sets, fastened to the bottom of the petals, and shorter than they are. Germ ovate, five-cornered. Found in Guinea by Andr. Berlin^k.

10. This is a tree with the appearance of Bay. Leaves opposite, petioled, acute, quite entire, smooth, like those of Bay, with transverse veins. Panicle terminating, brachiate, the length of the leaf. Petals obovate, straighter on one side, the length of the calyx. Five minute nectareous scales alternate with the stamens. Germ the length of the calyx. Berry ovate, with five swellings, and five cells. The tree abounds with a saffron-coloured viscid juice^l.

Loureiro has described a plant which he found near Canton in China under this name, but differing very much in the description. The stem is shrubby, manifold, three feet high, angular, diffused. Leaves broad-lanceolate, quite entire, scarcely tomentose, opposite, petioled. Flowers reddish-yellow, axillary and terminating, on few-flowered peduncles. Stamens in three elevated sets, with as many large alternate glands at the base. Styles three. Capsule three-celled.

According to Linneus, it was found in New Granada by Mutis.

11. Branches round, purplish, flexuose-ascending, spreading, weak, smooth. Leaves opposite, sessile, acute, ferruginous underneath, horizontal, an inch long, double the length of the internodes. Flowers solitary at the ends of the branchlets. Calycine segments ovate, very blunt, smooth, half the length of the corolla, which is yellow, but reddish underneath. It differs from *H. calycinum* in having smaller leaves, not coriaceous, rolled back at the edge, in having the stem frutescent only at the base; and the branches loose and spreading.—Native of Japan^m.

12. Stem a cubit and half high, round, smooth, rufescent. Leaves pale green, paler underneath, an inch long and half an inch wide, roundish, opposite. Flowers terminating; calyx green; corolla pale yellow, five times as large as in common *Hypericum*; petals an inch long. Found in the Pyrenees by Burserⁿ.—Native also of Siberia and Canada, according to Linneus, who remarks that the leaves are acute.

13. Root perennial, thick, woody, of a reddish colour, sending out very long fibres. Stems suffruticose or undershrubby, ancipital two-edged or slightly winged on opposite sides, two feet high and more, branched towards the top, of a reddish colour and smooth. Branches brachiate or decussated, spreading. Leaves opposite, sessile, ovate, entire, smooth, dark green, glaucous on the under side, netted with numerous projecting veins and nerves, which become through age ferruginous. On the stem they are two inches long, and an inch and half broad at the base; those on the branches are smaller, of different sizes, and some of them approaching to lanceolate. Flowers small for the size of the plant, disposed in a cyme. Peduncles round, smooth, usually two or three-flowered, but sometimes one-flowered. Calyx deeply divided; segments ovate, slightly nerved, unequal, the three outer segments being commonly much larger than the two inner ones; they are upright and longer than the germ, but that advances above them as it ripens into a fruit, and then the segments of the calyx turn back to the peduncle. Petals ovate, obtuse, nearly equal, a little longer than the calyx, spreading, concave, the tips bending a little inward, deciduous. Filaments more than forty, longer than the corolla. Anthers small and roundish. Germ roundish, shining, yellowish. Styles the length of the germ, upright, permanent. Fruit an ovate capsule, assuming the appearance of a berry; at first yellowish green, then red or brownish purple, and lastly almost black when ripe^o.

The juice expressed from the leaves is claret-coloured. The leaves were formerly applied to fresh

wounds, and hence the French name of *La toute saine*, and our English one of *Tutsan*. It is also called *Park-leaves*, from its being frequently found in parks. In Italian, Spanish, and Portuguese it is *Androsæmo*; in German *Konradskraut*, or *standenartige Johanniskraut*; in Dutch *Grootbladig Hypericum*, or *Mansbloed*. It flowers from July to September.

Native of the southern parts of Europe and Britain, in woods and moist hedges. With us, near London it is found about Hampstead and Highgate; on Bacher heath and Harefield, Middlesex; in the Oak of Honour wood near Peckham Rye; and in several parts of Norwood, but sparingly. In many parts of England it is more common; as in the Duke of Bridgewater's woods at Askeridge, and near Berkhamstead, Hertfordshire; in lanes at the foot of Malvern-hill, Worcestershire, and between Worcester and Tewkesbury; in Shotover plantations; Stokenchurch and Nettlebed woods, Oxfordshire; near Pengwarry in Cornwall; rocky woods in Westmoreland; King's Cliff in Northamptonshire. In Scotland also, as in the woods at Inverary, and at Loch-Ransa, in the isle of Arran.]

14. This rises with many upright woody stalks about a foot high. Leaves small, lanceolate, sessile, opposite. Flowers terminating, three or four together. Petals oblong, bright yellow. Filaments unequal, some longer others shorter than the petals. Germ ovate. Styles longer than the stamens. It flowers from July to September.

[It differs from *H. calycinum*; not only in having three styles, and the segments of the calyx acute, but in having higher stalks, smaller leaves resembling those of common *Hypericum*, only still less, and the capsule round like that of *Androsæmum*, with three cells, whereas that is oblong with five cells^p.

Native of the Levant, and found by Sir George Wheler on mount Olympus.—Cultivated in 1706 in the botanic garden at Chelsea^q.

Loureiro describes it as a tree ten feet high with spreading branches. Leaves ovate-lanceolate, quite entire, smooth, opposite. Flowers on hoary peduncles, one or two together, lateral and terminating. Calyxes acute. Petals quite entire. Stamens in three sets. Capsule three-celled.—Native of CochinChina, and of China about Canton.

15. Native of the Azores, where it was found by Mr. Francis Masson. Introduced in 1778. It flowers in August.

16. Native of Madeira. Introduced in 1779 by Mr. Francis Masson. It flowers in August^r.

17. Branches quadrangular at top, smooth with a purplish bark. Leaves petioled, two inches long and more, a little acuminate, veinless, coriaceous, quite entire, with a glaucous dew scattered over the upper surface. Raceme terminating, compound, a span long. Peduncles compressed. Pedicels four or five at each joint of the partial peduncle, short. Calyx five-leaved; leaflets ovate, smooth, quite entire, even, naked. Petals of the same length and form with the calyx. Filaments in three sets, connected almost to the top; the sets are squarrose on the outside with the distinct spreading tips of the filaments, which are covered with numerous anthers, and are even within. Germ three-cornered, smooth, ovate. It has the habit of *H. guineense*, but differs in the number of pistils and in the inflorescence.

Native of the East Indies^s.

18. Stem upright, simple at bottom, smooth, as is the whole plant, four-cornered by means of a line running down from each side of the base of the leaf. Leaves sessile, veinless, paler underneath, the lower ones narrower, the upper ones ovate-attenuated, without glands or dots. Peduncles terminating and at the divisions, filiform, solitary, one-flowered, an inch long. Calycine leaflets lanceolate, quite entire, without glands, the length of the corolla. Stamens as long as the corolla.—Native of New Caledonia in the South Seas^t.

19. This is a small tree or shrub with alternate

^k Linn. suppl. ^l Ibid. ^m Thunberg. ⁿ Bauh. prodr.
^o Curtis, With. Lightf.

^p Ray. ^q Hort. kew. ^r Ibid.
^s Vahl. ^t Ibid.

branches. Leaves opposite, petioled, acute, naked, two inches long. Peduncles axillary, solitary, bifid; and terminating many-flowered. Calycine segments roundish, lying over each other on one side, coriaceous. Petals obovate, striated, longer than the calyx. Filaments three, broad, divided into many threads which are gradually higher from the outside, the upper ones barren, the outer anther-bearing. Germ three-cornered. Styles broadish.—Brought from China by Bladh ^a.

20. This is a middle-sized tree, about sixteen feet high, with ascending branches, divided into very many dusky-red branchlets. Leaves lanceolate-ovate, blunt, quite entire, smooth, small, opposite. Peduncles five-flowered or thereabouts, axillary. Calycine segments acute, entire. Petals scarlet, ovate-oblong, entire, spreading. Nectary of three large, reclining glands. Stamens about one hundred, in three sets. Capsule ovate, coloured, three-celled, filled with many oblong, flattish seeds.—Native of Cochinchina, in woods.

The wood of this tree is red, heavy, hard and tough; and is used for making oars and yards of vessels. The juice of the flowers dyes of a golden colour ^x.

21. Stature and stamens of *Gordonia Lasianthus*. Stem four-cornered, blunt. Stipules none. Leaves like those of Lemon, petioled, acute, obscurely tomentose underneath. Corymb brachiate. Sets of stamens oblong, very handsome.—Native of Brasil ^y.

Here we have inadvertently two different plants under the same name; this and n. 10.]

22. Canary St. John's-wort rises with a shrubby stalk six or seven feet high, dividing into branches at top. Leaves oblong, set by pairs close to the branches, having a strong odour, but less than those of the hircinum. Flowers terminating in clusters, very like those of hircinum. Stamens longer than the petals.—Native of the Canary islands. [Cultivated in 1699, by the Dutchess of Beaufort. It flowers from July to September.

23. Native of North America. Cultivated in 1762 by Mr. James Gordon. It flowers in July and August ^z.]

24. This rises with shrubby stalks about three feet high, sending out small opposite branches at each joint. Leaves oblong, ovate, placed by pairs, sessile, and having a rank goatish smell. Flowers in terminating bunches. Petals oval. Stamens longer than the petals, and styles longer than the stamens. Capsule ovate. [Native of the South of Europe. Cultivated here in 1640. It flowers from July to September.

There are two varieties of it in the gardens, one larger, which is the common one; the other smaller ^a.

25. This is a shrub a span high, very much branched, and brachiate; the branchlets are compressed. Leaves like those of knot-grass (*Polygonum*), ovate, very small, acuminate, veinless, sessile, longer than the joints of the branches. Flowers commonly in pairs on the branchlets. A nectariferous oblong scalelet, within the claw of each petal. It has the appearance of a sand plant, and is a native of Egypt ^b. Introduced in 1787, by Mons. Thouin ^c.

26. Roots in old plants hard, woody, and more than half a foot in length; in young plants a tuft of yellowish fibres three or four inches long. Stems from six inches to a foot in height, some upright, others ascending, pale green, a line in thickness, with a small wing descending from one leaf to another. Leaves opposite, an inch or fifteen lines in length, and two lines in breadth, pale green, crenate like *Parmica* or *Sneeze-wort*, sessile, with two very pointed earlets at bottom, two lines long, cut more deeply than the rest of the leaf. From the upper axils spring little branches, with leaves like the others, but shorter and wider. These flowering-branches form a cyme like that of common St. John's-wort. Petals eight or nine lines long, and three lines wide, rounded at top. Stamens shorter than the petals. Calyx three lines long, toothed on the edge. Capsule russet-coloured, three lines long,

five-celled. Seeds brown. The whole plant has a resinous smell. It varies much in size, as does also the flower, the petals being sometimes ten lines in length. The leaves are bitter and a little viscid.—Native of the Levant ^d.

27. Stems shrubby, when old wrinkled by the falling of the bark, herbaceous, rufescent, having raised dots scattered over them, whence they are rugged. Leaves opposite, oval-lanceolate, even, quite entire. Flowers small, in terminating corymbs. The scars or raised dots on the stem are longer than in *H. balearicum*, the leaves have no apparent glands, and there being only three styles in the flowers, this is distinct from that.—Native of Arabia and Barbary.

28. Root perennial. Stems at bottom woody, round, filiform, creeping; putting out roots at the joints. Leaves quite entire, opposite, rather crowded. Flowers terminating, three, the middle one sessile. Calyx and bractes having brown dots scattered along the edge, but not ferrate.

Native of the Levant, where it was found by Tournefort. Hasselquist also discovered this in Palestine, and the preceding in Arabia ^e.

29. Stems straight, purplish. Leaves commonly revolute, whence they appear narrow like those of Rosemary. There are very many primordial leaflets of the branchlets from the axils. Panicle small, terminating. Flowers of the first and second dichotomy sessile; the rest terminating, peduncled; seldom more than seven. Stamens not longer than the petals.

Native of North America ^f. Cultivated in 1758 by Mr. Miller. It flowers from June to August ^g.

30. Native of Spain, where it was found by Tournefort, and of Portugal.

31. This has the appearance of Lesser Centaury. Stems herbaceous, round, branched, smooth. Leaves linear or sub lanceolate, quite entire, smooth. Panicle dichotomous, with pedicelled flowers, which are very small, the size of those of Spurge. Pericarp twice as long as the calyx, conical, red.

Native of North America. Kalm observed it in Canada ^h.—Introduced in 1770 by Samuel Martin, M. D. It flowers from July to September ⁱ.

32. Stem upright, as it were shrubby. Leaves cordate-ovate, with pellucid dots, an inch and half long. Petals pale red. Filaments nine, connate in three sets. Nectaries three, alternate with the stamens, obtuse, thick, gibbous without, concave within.

Native of North America ^k. It was found by Miss Colden, daughter of the Hon. Cadwallader Colden, in 1753, and she named it *Gardenia*; it was also found the year following by Dr. Garden, about a mile from New-York. It is described by both, in the first article of the second volume of *Essays and Observations Physical and Literary*, read before a society in Edinburgh, and published by them in 1756, octavo.

33. Stems a foot high, simple, rugged with warts from the fallen leaves, perennial. Leaves sessile, opposite, blunt, veinless, even. Corymb terminating, dichotomous, sessile, not longer than the leaves. Petals linear.—Found by Mutis in New Granada ^l.

34. Native of North America, where it was found by Samuel Martin, M. D. Introduced in 1772. It flowers in July ^m.

35. This is a large shrub with divaricating branches, the last leafy and tomentose. Leaves quite entire, incumbent, perforated, black-dotted at the edge. Panicle rounded. Bractes and calyxes awl-shaped ⁿ.

Native of the island of Teneriffe. Introduced in 1788, by Mr. Francis Masson. It flowers most part of the summer ^o.

36. Square-stalked St. John's-wort is sufficiently distinguished from the other species by that circumstance which has given occasion to the trivial name.

The root is perennial, somewhat creeping and fibrous. Stems from a foot to eighteen inches in height, upright, branched, smooth, reddish, square from having

^a Retz. ^x Loureiro. ^y Linn. spec. ^z Hort. kew.
¹ Ibid. ^b Lian. spec. ^c Hort. kew.

^d Tournef. voy.

^e Hort. kew.

^f Linn. mant.

^g Linn. suppl.

^h Linn. amoen.

ⁱ Linn. spec.

^j Linn. suppl.

^k Linn. suppl.

^l Hort. kew.

^m Hort. kew.

ⁿ Linn. suppl.

^o Hort. kew.

four little membranes or wings running down them. Branches decussately opposite. Leaves blunt, smooth, deep green but paler underneath, strongly marked with seven or nine ribs, having a net-work of veins, with transparent glands in the interstices, but not very numerous; discernible when viewed with a glass in a strong light; the edge, especially on the under side, dotted with black glands: the lower ones sessile, opposite; the upper growing together. Flowers small, terminating in close panicles: branchlets deep red or blood colour: peduncles very short: bractes subulate, in pairs. Calycine segments deeply divided, lanceolate, spreading, ribbed, entire except at the end where they are sometimes a little toothed; they have no glands. Petals finely grooved, concave, marked with lines and dots, filled with a purple liquor, which stains paper with a muddy purple permanent stain. Filaments scarcely divided into sets or bundles. Anthers roundish, yellow, having a black gland between the lobes. Germ obovate. Styles spreading, awl-shaped, yellow. Stigmas very small, purple. Capsule brown. Seeds oblong, somewhat shining^p.

Native of most parts of Europe, in moist hedges, shady places, wet meadows, by rivulets and in bogs; flowering in July.

37. Root perennial, woody, brown. The whole plant is sprinkled over with small black glands, and is quite free from hairs. Stems several, about two feet high, woody, upright, smooth, round or nearly so, alternately two-edged, much branched. Branches opposite, nearly upright, two-edged. Leaves decussately opposite, sessile, oblong-ovate, yellowish green, with seven or five semitransparent lines, and several black dots near the edges on the under side; the semitransparent dots numerous. Peduncles from the axils of the upper leaves, two-edged, supporting many flowers in a bushy panicle. Calycine segments lanceolate, acuminate, striated, entire, without glands, about half the length of the petals. Petals striated, set near the edges, and sometimes over the whole surface with very dark-purple glands, one of the sides entire, the other irregularly notched. Filaments thirty or more, scarcely united into three sets or bundles. Anthers two-celled, each of the cells roundish, with a small, globular, black gland between them. Germ subovate. Style divaricating. Stigmas dark red or crimson^q.

Common in woods, thickets, hedges and dry banks, flowering from July to September.

Although in the present practice St. John's-wort is not much regarded, yet its sensible qualities, and the repeated testimonies of its virtues, entitle it, as Dr. Cullen observes, to farther trials. To the taste it is astringent and bitter, and its effects seem to be chiefly diuretic. From possessing properties which have been generally called balsamic, it has been used as a vulnerary in external wounds and internal hæmorrhages, for the former purpose the tops of the plant with the flowers are infused in oil, and for the latter an infusion of the plant is made in the manner of tea. It has likewise been given in ulcerations of the kidneys, and has even been supposed to possess virtues as a febrifuge. The leaves given in substance are said to destroy worms. The semitransparent dots on the leaves are the receptacles of an essential oil. The flowers tinge spirits and oils of a fine purple colour, which is probably derived from the little glands upon the anthers and edges of the petals. The dried plant boiled with alum dyes wool of a yellow colour.

The common people in France and Germany gather it with great ceremony on St. John's day, and hang it in their windows, as a charm against storms, thunder, and evil spirits; mistaking the meaning of some medical writers, who have fancifully given this plant the name of *Fuga Dæmonum*, from a supposition that it was good in maniacal and hypochondriacal disorders. In Scotland also it is carried about as a charm against witchcraft and enchantment; and they fancy it cures rosy milk, which they suppose to be under some malignant influence, by milking afresh upon the herb.

^p Curtis, Withering, Woodw. Mss.

^q Curtis, Withering, Lightfoot.

Kine, goats, and sheep eat it, but horses and swine refuse it^r.

38. Stems several from two to three feet high, upright, sprinkled with black dots. Leaves large, embracing the stem, ovate, very thin and skinny at the edge, with black dots underneath. Calycine leaflets very blunt, yellow green, marked with short black lines. Petals large, very entire, yellow, with black lines above, and a few black dots on the edge underneath^s.

In habit, size, and colour it nearly agrees with *perforatum*, but differs essentially in having no pellucid dots apparent on the leaves, and in the calycine leaflets being elliptical and obtuse. The latter indeed, and even the bractes, are sprinkled with pellucid dots and lines; and the petals as well as the edges of the leaves are marked with opaque purple as in that; but the stem of this is in the upper part almost quadrangular; and it may be known even before it comes out of the ground, by the much more vivid red of the young shoots. It is not, as Leers suspects, the same with *H. perforatum* of Linneus.

Native of Germany, Dauphiné, and England; probably of other countries, but unnoticed. First discovered in England in July 1794, by Dr. John Seward of Worcester, growing plentifully about Sapen in that county, and ascertained by the Rev. Mr. Douglas to be *H. dubium* of Leers. Dr. Smith found it in August 1795 about Col. Johnes's at Hafod, Cardiganshire, and in Mr. Knight's woods at Downton Castle, near Ludlow. It flowers in July and August^t.

39. Root perennial, yellowish, fibrous. Stems numerous, about half a foot in length, procumbent, round or somewhat flattened, scarce perceptibly two-edged, smooth, reddish, branched at top. Leaves opposite, oblong-ovate, obtuse, entire, dotted on the edge with black, with semitransparent dots on the surface not distinguishable but with a glass and a strong light. Peduncles axillary and terminating, solitary or sometimes in pairs. Bractes none. Calycine segments large, unequal, ovate-oblong, the edge turned back and ferrate as it were with dark-purple glands, terminating in a red point. Petals oblong, blunt at the end, a little longer than the calyx, dotted on the edge with glands, having a tinge of red on the outside. Filaments seldom more than twenty, in three distinct sets, five or six in each. Anthers very small, without glands. Germ roundish. Styles simple, spreading, the length of the stamens. Stigmas sometimes tinged with red. Capsule oblong-ovate, membranaceous, of a very bright red colour before it is ripe.

It is the least of our wild *Hypericums*, scarcely inferior to any in beauty and delicacy; and is not unfrequent in gravelly pastures, in fields that have long lain untilled, on heaths, especially where the soil is moist and clayey, and sometimes in woods: flowering from June to August.

It varies with leaves growing by threes. Scopoli fancies it, but surely without grounds, to be a monstrous variety of *H. perforatum*^u.

40. Leaves very minute, half stem-clasping, curled at the base, whence the trivial name.—Native of Calabria, Sicily, and Greece^x.

41. Stem next the root woody, very smooth and even, slender, quite simple except that it is sometimes branched at the base; the branches a foot long, nearly as high as the stem. Leaves sessile, remote, revolute. Peduncles at top, filiform, few, spreading, opposite, commonly three-flowered. Calycine leaflets lanceolate, with a few bristle-shaped toothlets glandular at the tip. Corollas small, a little longer than the calyx. Filaments shorter than the petals.—Found by Vahl on heaths near Bayonne and in Navarre^y.

42. Stem upright; round, smooth, about eighteen inches high, very little branched and naked for a considerable distance under the flowers. Leaves few, in pairs, sessile, ovate, the upper ones ovate-lanceolate, with seven ribs, and a net-work of veins, the edges set with black dots: the upper leaves have numerous, minute,

^r Curtis, With. Lightf.

^u Curtis, With. Lightf.

^s Leers.

^x Linn. mant.

^t Engl. Bot.

^y Vahl.

circular, transparent dots, visible to the naked eye : but the lowermost are dotted only towards the base. Flowers in short, branched, terminating or axillary panicles, few together. Bractes, peduncles, and calyxes beset with strong hairs, each terminated by a black gland. Calyx divided almost to the base, into lanceolate, pointed segments². Petals sometimes dotted towards the top. Stamens in three sets. Anthers with a black spot or glandule near the base².

Native of many parts of Europe, in woods and thickets in high situations. In Britain, in Charlton wood, Kent, and near Croydon in Surry. Bath hills near Bungay, Suffolk. Stokenchurch, Henley and Maple-Durham, Oxfordshire. Pershore and Bredon-hill, Worcestershire. Frequent in the West of England. In Anglesea, Wales. Near Ingleton, Cartmelwell, and Furness Fells in the North, and in Scotland, but not common.

43. Root perennial. Stem upright, simple, smooth, round, about a foot high, tinged with purple. Leaves oblong-lanceolate, sessile, blunt, very smooth, entire; these with the calyx and petals have black dots scattered over them on both sides. Flowers terminating, few, without smell. Calycine leaflets lanceolate, acuminate, green, with long glandular soft hairs about the edge. Petals obovate, very blunt, flat, striated, very minutely, sharply and unequally serrate at top, some of the serratures being terminated by a hair. Filaments, anthers, and styles yellow as well as the corolla. Germ ovate, smooth, pale yellow. Stigmas brownish. Capsule ovate, brown, smooth, acuminate, with a glass appearing to have numerous pellucid glands scattered over it. Seeds yellowish.

Native of Austria, where it was found by Mygind and Boujart; in pastures by wood sides, flowering in June, and perfecting seeds in July and August^b.

44. Branches obscurely four-cornered, smooth, dichotomous. Leaves sessile, smooth, nerved above, marked with very fine lines along the nerves, dotted on both sides, sharp at both ends. Peduncles from the extreme axils, three-flowered; solitary in the divisions. Calyx half the length of the corolla, with brown glands at the edge. Corolla pale yellow with brown dots^c.

Native of Madeira. Mr. Francis Maffon. Introduced in 1777. It flowers from May to August^d.

45. Root perennial, fibrous; fibres brown, rigid, somewhat woody. Stems a foot and half to three feet high, upright, solid, reddish, round, hairy or downy, generally simple but sometimes branched, much less so however than common St. John's-wort. Leaves decussately opposite, oblong, obtuse, sessile, hoary on each side, seven-ribbed, minute transparent dots all over the surface, edge finely ciliated. Those of the stem are ovate, broader than in *H. perforatum*; those of the branches are lanceolate. Sometimes the larger leaves have nine ribs. Rudiments of branches consisting of four leaves forming a cross are generally observed in the axils of the leaves; these however are sometimes wanting, and sometimes are drawn out into branches. Flowers terminating, in an oblong panicle forming a kind of spike. The floral leaves have glandular serratures at the edges. Calycine segments lanceolate, with two grooves, and about twelve serratures at the edge, each tipped with a gland. Petals oblong-ovate, blunt, spreading, with six or eight ribs, and a few black glands at the end. Stamens about twenty-four (twenty to thirty), obscurely divided into three bundles, very fine, straight, yellow, shorter than the corolla. Anthers roundish, double, without glands. Germ ovate. Styles spreading, the length of the stamens, yellow turning blackish by age. Stigmas crimson.

It differs from common St. John's-wort in being taller, having the stem perfectly round and hoary, and the edge of the calyx beset with black glands. It is also more apt to grow in woods and coppices, though it is frequently met with in hedges^e. Linneus says, that the flowers close in the night, which those of

H. perforatum do not. It flowers from June to August.

46. Stem round. Leaves sessile. Flowers in terminating, bifid racemes. Stamens in three sets or bundles^f.

Native of the South of Europe. Introduced in 1772, by Mons. Richard. It flowers from July to September^g. Ray observed it about Montpellier, and in the island of Malta, where water had stagnated during winter.

47. This is a native of Italy, and was introduced in 1785 by Mr. John Græfer. It flowers in May and June^h.

48. Stems round, and nearly prostrate among wet moss and grass, throwing out long fibrous perennial roots from the first three or four joints; its substance is spongy, and its upper part downy. Flowering branches ascending, five or six inches high. Leaves opposite, covering the stem, almost orbicular, blunt sometimes emarginate, entire, with five or seven ribs or nerves, clothed especially on the back with down composed of fine short jointed hairs; the dots on them are not visible but with a glass and held against a strong light. The panicle, terminating at first, becomes lateral by the protrusion of the stem beyond it, and is dichotomous, rarely producing more than from five to ten flowers, which appear in July and August, and seldom expand except in bright sunshine. Floral leaves oval-lanceolate, minute, reddish, edged with red glands, a pair beneath each division. Calyx divided about half way, fringed also with red glands, about one-fourth of the length of the corolla. Petals yellow or reddish yellow, twisted spirally or sometimes merely folded up, marked with eight greenish lines or ribs, and having three small greenish glands on the inner side of the claws at the base of the germ. Stamens in three sets, divided about half way down into from three to five filaments.

This, as Linneus observes, is very nearly related to his *H. tomentosum*; which however differs from *elodes* in having oblong leaves, the veins of which spring from the midrib, and not from the base, a much larger and more compound panicle, the calyx and stamens more deeply divided, the former bearing black or purple glands.

Besides England, this species has not been observed as a native, except in the northern part of France. With us it is not uncommon in bogs: as on Hayes common in Kent, Dersingham moor near Lynnⁱ, and other bogs in Norfolk, Gamlingay bogs in Cambridgeshire, Birmingham heath, in Cornwall, &c.

49. The whole plant is smooth. Stems from one to two feet high, upright, round, often red, thinly branched, the joints remote: branches opposite, short, slender and like the stem. Leaves in distant pairs, triangularly-cordate or obtusely ovate, shining, embracing, nearly horizontal, deep green above, glaucous beneath, with numerous semitransparent dots, particularly near the edge and top, more solid to the touch than in the other species, and frequently of a bright red colour towards the bottom; those on the branches three times smaller than the stem-leaves, and those on the peduncles lanceolate. Flowering-branches or peduncles round, slender, axillary, with from one to three flowers at top. Bractes none. Calyx very short, deeply divided; segments ovate, striated, serrated, and edged with little glands of a blackish red colour. Petals oblong-ovate, slightly striated; on the under side tinged with bright orange, slightly serrated, and edged with the same dark-coloured glands. Filaments in three sets, from twelve to eighteen in each, shining, yellow. Anthers roundish, two-celled, with bright scarlet pollen. Germ ovate. Styles the length of the germ, spreading. Stigmas small, roundish. Capsule somewhat conical, brown. Seeds oblong, brown^k.

Native of most parts of Europe in woods, on heaths, banks and in hedges, especially in a clayey soil: flowering in June and July.

² Woodw. Mfs. Stokes in With. ^a Lightfoot. ^b Jacquin.
^c Vahl. ^d Hort. kew. ^e Curtis, Wither. Lightf.

^f Linn.

^g Hort. kew.

^h Ibid.

ⁱ Eng. bot. Woodw. Mfs. Wither.

^k Curtis, Woodw. Mfs. Wither.

50. This is a very small plant. Stems two or three, round, simple, five or six inches long, prostrate. Leaves thick, solid, round, rufet or glaucous underneath without nerves. Flowers three or five; terminating, large; petals oblong, toothed at the end, and often turned back. Calyx smooth; with blunt rounded segments. Stamens from forty to forty-five.

The leaves differ from those of all the other species in being thick and fleshy, though very hard, and uniform throughout.

Native of Dauphiné near the Grande-Chartreuse¹.

51. Root, with capillary fibres. Stem smooth, seldom branched, paniced at top, a foot high. Branches either few from the root, or several from the upper part of the stem, capillary, opposite, upright, like the stem. Leaves opposite, subcordate, blunt, smooth, reflex and waved a little on the edge; nerved, paler and dotted underneath; upright, often complicated, shorter than the internodes, the upper and lower smaller. Flowers small, peduncled, solitary and terminating in the axils of the panicle. Bractes opposite, lanceolate, acuminate, entire, smooth, under each branch of the panicle. Peduncles capillary, one-flowered, upright. Calyx divided almost to the base; segments oblong, acute, erect, permanent. Petals oblong, the same length with the calyx. Filaments in several sets, connected only at bottom, capillary, a little shorter than the corolla, yellowish; anthers round. Styles distant, the length of the corolla; stigmas blunt. Capsule oblong, acute, smooth.—It differs from *H. quadrangulum* in being many-times smaller, and in having a weak stem decumbent at the base:—from *H. perforatum* in the same circumstances, and in having a quadrangular stem.

Native of Japan, and flowering there in June.

52. Stem upright, purple, smooth, simple or branched only at top. Branches opposite, subfastigate, like the stem. Leaves opposite, entire with a reflex margin, veined, smooth, pressed almost close to the stem: the lower longer, the upper shorter than the internodes. Flowers terminating, about three together. Peduncles and pedicels filiform, like the stem, leafy, fastigate. Calycine segments lanceolate, smooth, almost the length of the corolla; which is scarcely longer than the stamens.

Native of the mountains of Japan, flowering in August^m.

53. Stem round, a long span in height. Leaves glaucous, linear, narrow, like those of *Linaria*, in foursⁿ. Stipules commonly on each side solitary, or two to each leaf, of the same size and form with the leaves: hence when the leaves are opposite there are six at each joint, four of which are stipules^o. Flowers terminating, in a loose spike, on one-flowered peduncles. Peduncles and bractes full of large black glands. Petals large in proportion to the plant, marked with lines^p.

This is an elegant little evergreen, forming a pretty bush, and flowering during most of the summer.

Native of the South of Europe and many parts of the Levant, the Crimea, &c.^q It was cultivated here in 1640^r.

54. Leaves glaucous, pressed close to the stem, scarcely conspicuous.—Native of Virginia, in watery places^s.

55. Stem shrubby, four-cornered, hairy, branching like Horse-tail. Leaves very small, hairy, pressed so close to the stem as to be scarcely visible. Flowers golden-coloured^t.

Native of Virginia and Carolina. Introduced in 1787 by Thomas Walter, Esq.^u

56. Stem shrubby, smooth, with a brown wrinkled bark. Branches opposite, mucicated by the fallen leaves, jointed; the lower joints shorter, obscurely four-cornered; the upper ones alternately compressed, ancipital, dilated towards the top. Leaves opposite, sessile, longer than the internodes, approximating, quite entire, veinless, even. Flowers terminating, solitary,

the same size as in *H. balearicum*, on very short peduncles. Corolla longer than the calyx. Germ ovate. Style semitrifid^x.—Native of Arabia.]

57. Root composed of many woody fibres striking deep into the ground. Stems several, shrubby, near two feet high, covered with a purplish bark. Leaves stiff, smooth, about two inches long, and a quarter of an inch broad, opposite, sessile, of a lucid green on their upper surface, and gray underneath, having many transverse veins running from the midrib to the border. Flowers terminating in small clusters, each on a short peduncle. Calycine segments divided almost to the bottom, obtuse, deep purple. Petals large, obtuse, bright yellow, concave. Germ ovate. Stigmas five, slender, bending on one side.

It continues in flower from March to September.—Native of China, whence the seeds were brought to Hugh Duke of Northumberland; the plants were raised at Stanwick in 1753, and communicated to the botanic garden at Chelsea.

[General Remarks.

If the following remarks be attended to in conjunction with those which were made at the head of the above descriptions, the investigation of the numerous species will be facilitated.

1. All the species are perennial except the 31st.
2. The following are herbaceous—6. 8. 12. 31. 36. 39. 42. 48. 49. 50. 51. 52.

Most of the rest are shrubby, or at least suffrutescent, or woody at the base.

The stem is Cylindrical in 8. 9. 10. 27. 28. 31. 32. 33. 37. 40. 41. 42. 43. 45. 46. 48. 49. 50. 52. 53.—Ancipital or two-edged in 13. 24. 25. 29. 39. 47.—Quadrangular in 1 to 6. 12. 14. 17. 18. 21. 36. 38. 44. 51. 55. 56.

4. The leaves are alternate only in the 7th and 8th species: in the rest they are opposite.

5. The flowers are in Racemes or Panicles in 3. 4. 6. 8. 10. 17. 24. 29. 31. 34. 35. 36. 37. 38. 42. 45. 46. 48. 51.—In Cymes in 13 and 47.—Umbels in 9.—Corymbs in 21. 27. 33.—Solitary in 1. 2. 5. 7. 11. 18. 19. 36. 56.

6. Some of the species have Bractes or floral leaves, as 5. 7. 28. 36. 42. 45. 48. 51. 53, and probably several others: many however have none.

7. Some species have five or three nectareous glands alternate with the stamens, as 3. 4. 9. 10. 20. 25. 32. Probably future observation will inform us that others also have these glands.

8. The fruit in most species is a Capsule; in 3. 4. 10. 13, however it is a Berry, or rather a berried Capsule; being a Berry rather in appearance than structure.

9. Natives of Europe are 1. 13. 24. 36. 37. 38. 39. 40. 41. 42. 43. 45. 47. 48. 49. 50. 53. Of these 13. 36. 37. 38. 39. 42. 45. 48. 49, are natives of Britain. The rest are found in the East Indies, America, Japan, &c.

10. Though our Common St. John's-wort (n. 37.) be named *Perforata* by some old writers, and *H. perforatum* by Linneus, from the remarkable vesicles appearing as pellucid dots in the leaves; yet we must remember that this species possesses the character in common with several others, though not so evidently to the naked eye. This circumstance is said to have given rise to the generic name; the dots being like lenses, through which the *icones* or images of objects may be discerned.

PROPAGATION AND CULTURE.

Of the numerous species above recited that have been introduced into culture in Europe, many are very hardy, and being perennial may easily be increased by parting the roots, as well as by letting the seeds scatter. These hardy sorts are 4. 5. 6. 13. 14. 22. 23. 24. 29. 31. 34. 36. 37. 38. 39. 42. 45. 48. 49. 53. 55. The rest require the protection of a greenhouse, but none are so tender as to need the assistance of a bark stove.]

¹ Villars. ^m Thunberg. ⁿ Haller. ^o Linn.
^p Haller. ^q Curt. ^r Hort. kew.

^s Linn. syst. and Clayton in Gron. virg.

^t Pluk. and Clayton in Gron. virg. ^u Hort. kew.

^x Vahl.

1. Warted St. John's-wort requires no artificial neat. If the plants be placed in a dry airy glass case in winter, where they may be protected from frost, and enjoy a good share of fresh air in mild weather, they will thrive better than in a warmer situation; but they must by no means be placed in a damp air, for their shoots would soon grow mouldy and decay; nor should they have much water during the winter. In summer they should be exposed to the open air, and in warm weather they should be gently watered three times a week; and they should have a loose sandy soil not over rich.

This is propagated by cuttings planted in June, in pots filled with light earth, and plunged into a very moderate hot-bed, shading them from the sun, and refreshing them with water. They will put out roots in six or seven weeks, when they should be carefully taken up, and each planted in a separate small pot, placing them in the shade till they have taken new root; then they may be removed to a sheltered situation, where they may remain till frost comes, when they should be put into a greenhouse or glass-case.

It may also be increased by seeds sown in autumn. See n. 14.

2. This and the other North American forts, seldom producing ripe seeds here, may be increased by parting the roots in autumn. It should have a light soil and an open situation.

5. Garden Tutfan is easily propagated by parting the roots in October: these spread and increase very fast, where it stands long unremoved.

13. Growing wild in woods is not often admitted into gardens: it may be increased by parting the roots, and loves shade with a strong soil. [It is not unfrequently seen in plantations among other shrubs, where it is as ornamental as many others.]

14. This also is usually propagated by parting the roots in September, because the seeds seldom ripen in this country. It will live in the open air, in a warm situation and dry soil: but it will be proper to keep a plant or two in pots, to be sheltered under a frame in winter, to guard against severe frost.

If this be increased by seeds, they should be sown soon after they are ripe, in pots filled with light earth, and placed under a frame in winter; in spring the plants will appear, and when they are fit to remove may be planted in a warm border or in pots, and treated as the old plants.

22, 23, 24. These are propagated by suckers, taken off in March just before they begin to shoot, and planted in a light dry soil: or by cuttings, planted at the same season: or by seeds, sown in August or September, as soon as they are ripe: but as they multiply fast by suckers, the other methods are seldom practised.

[36, 37, 38, 39, 42, 45, 49. These being wild plants are seldom cultivated in gardens, they are not however without their beauty, and may be increased by parting their roots or permitting their seeds to scatter.

53. Is propagated by cuttings, and may stand in the open air, with a reserve of plants in case of very severe weather. It is however commonly considered as a greenhouse plant.]

57. Chinese Hypericum may be propagated by slips from the root, or by laying down the branches. If by slips, they should be planted in the spring on a moderate hot-bed: the layers should be made at the same time to take root by autumn, when they may be transplanted into pots, and sheltered under a frame in winter: in spring, part of these may be set in a warm border, and the others continued in pots to be screened in winter. Those plants which stand abroad will not flower in winter, as those do which are removed into shelter in autumn.

[HYPERICUM. See *Ascyrum*, *Diosma*, *Gordonia*.]

HYPERICUM FRUTEX. See *Spiraea*.

[HYPHYDRA. (From *υπο* & *υδωρ*; so named from its growing under water.)

Lin. gen. Schreb. n. 1484.

Tonina. Aubl. 330.

Class. 21. 10. Monoecia Gynandria.

GENERIC CHARACTER.

* Male flowers.

CAL. *Perianth* one-leafed, three-parted: lobes obovate, concave, curved in at top, smooth.

COR. none.

STAM. *Filaments* six, capillary, long, inserted above the germ at the corners. *Anthers* roundish.

PIST. *Germ* empty, inflated, membranaceous, hexagonal, truncate at top. *Style* capillary, the length of the stamens. *Stigma* none.

Female flowers.

CAL. none.

COR. none.

STAM. none.

PIST. *Germ* roundish, with three streaks. *Style* triangular. *Stigmas* three, acute.

PER. *Capsule* membranaceous, one-celled, three-valved.

SEED single, ovate, striated.

ESSENTIAL CHARACTER.

MALE. Cal. one-leafed, three-parted. Cor. none. Stam. six, inserted above the germ.

FEM. Cal. and Cor. none. Style triangular, with three stigmas. Caps. one-celled, three-valved. Seed single.

SPECIES.

1. *Hyphydra fluviatilis*.

Tonina fluviatilis. Aubl. *guian.* 857. t. 330.

Eriocaulon amplexicaule. Rottb. *surin.* 4. t. 1. f. 1.

DESCRIPTION, &c.

Stems and branches slender. Leaves alternate, long, narrow, lanceolate, smooth, acuminate, marked with lines, ciliate, embracing. Some of the stems are erect, others decumbent, the latter throw out roots. Flowers in capitate bundles: each composed of a male flower, involved in a long sharp bracte, ciliate at the edge, and a female flower included in three bractes of the same form: they are axillary, and on a slender peduncle.

This little plant is a native of Guiana, and grows three or four feet under water; it flowers in February.

HYPNUM. (*ὑπνον* of *Dioscorides*: said to be from *υπνος*, sleep.)

Lin. gen. Schreb. n. 1656. Hedw. *fund.* 2. 94.

Class. 24. 3. Cryptogamia Musci.

Nat. order of Musci or Mosses.

GENERIC CHARACTER.

CAPS. oblong. *Peristomium* double: outer with sixteen broadish teeth; inner membranaceous, equal, lacinated; segments broadish, with capillary ones interposed.

MALES gemmaceous on different plants.

Or thus,

Peduncle from a lateral tubercle, fenced with scales: capsule outer fringed with sixteen teeth.

Male a bud, generally on a different plant. *Withering*.

Hypnum is a very numerous genus of Mosses. Some of the Linnean species have been separated by Hedwig and others under different genera.

There are fifty species in the 14th edition of the *Systema vegetabilium*. Forty in Hudson's *Flora Anglica*: and seventy in the *Arrangement of British Plants* by Dr. Withering, who to facilitate the investigation of the species has thrown them into seven divisions. Figures of them may be seen in Dillenius, Hedwig, Dickson, who has discovered several new species, English Botany, Vaillant, Buxbaum, Morison, &c.

HYPNUM. See *Bryum*, *Dicranum*, *Fontinalis*, *Leskia*, *Mnium*, *Neckera*, *Sphagnum*.

HYPOCHOERIS. (*ὑποχοειρ* of *Theophrastus*, and *Hypochoeris* of *Pliny*. From *υπο* and *χοειρος* a hog.)

Lin. gen. n. 918. Reich. n. 997. Schreb. n. 1246.

Vaill. *mem. acad.* 1721. 28. 21. Juss. 170.

Gartn. t. 160.

Achyrophorus. Gartn. t. 159.

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of *Compositæ Semisfoculosi*. *Cichoraceæ*, Juss.

GENERIC CHARACTER.

CAL. Common roundish, imbricated, ventricose at the base; scales lanceolate, acute.

COR. Compound imbricated, uniform: corollets hermaphrodite, equal, numerous.

Proper one-petalled, ligulate, linear, truncate, five-toothed.

STAM. Filaments five, capillary, very short. Anther cylindrical, tubular.

PIST. Germ ovate. Style filiform, the length of the stamens. Stigmas two, reflex.

PER. none. Calyx converging, globular-acuminate.

SEEDS solitary, oblong. Down feathered, stipitate.

REC. chaffy: chaffs lanceolate-linear, the length of the seeds.

OBS. In *H. glabra* and *minima*, the seeds of the disk have a stipitate down, but in those of the ray it is sessile. Haller, Cyrillo.

ESSENTIAL CHARACTER.

Cal. subimbricate. Down feathered. Recept. chaffy.

SPECIES.

1. *Hypochoeris helvetica*. One-flowered *Hypochoeris*.
Lin. syst. 721. *Jacqu. misc.* 2. 25. *icon. rar.* t. 4.
H. uniflora. *Allion. pedem. n.* 850. t. 32. f. 1. *Villars dauph.* 3. 61. t. 23.
Hieracium alpinum, fol. dentatis, fl. magno. *Baub. pin.* 128. *prodr.* 65. *Hall. enum.* 760. t. 24. *Park. theat.* 797. *Raii hist.* 237.
Dens Leonis latifolius caulescens. *Baub. prodr.* 62. *Raii hist.* 237.
Stem simple leafy one-flowered, leaves lanceolate toothed.
2. *Hypochoeris maculata*. Spotted *Hypochoeris*.
Lin. spec. 1140. *syst.* 721. *Reich.* 3. 661. *hort. cliff.* 385. *fl. suec. n.* 708. *Huds. angl.* 346. *Wither. arr. ed.* 3. 691. *Engl. bot. t.* 225. *Relb. cant. n.* 579. *Hall. belv. n.* 2. t. 1. *Pollich pal. n.* 754. *Fl. dan. t.* 149. *Villars dauph.* 3. 62. *Krock. files. n.* 1315.
Achyrophorus maculatus. *Scop. carn. n.* 986.
Hieracium alpinum latifolium hirsutie incanum, flore magno. *Baub. pin.* 128. *Mor. hist. f.* 7. t. 5. f. 53.
H. latif. 1. *Clus. hist.* 2. 139. 2. *Raii syn.* 167. *Baub. hist.* 2. 1027. 1. *Petiv. brit. t.* 13. f. 1. *Ger.* 237. 1. *emac.* 301. 1.
Dens leonis fol. integris, caule raris foliis vestito monanthes fere. *Raii hist.* 244.
Hieracium latifolium pannonicum. *Park. theat.* 799. 13.
Stem almost naked, branch solitary, leaves ovate-oblong entire toothed.
3. *Hypochoeris glabra*. Smooth *Hypochoeris*.
Lin. spec. 1140. *syst.* 721. *Reich.* 3. 662. *hort. cliff.* 386. n. 4. *hort. upf.* 240. *Gartn. fruct.* 2. 374. *Huds. angl.* 347. *Wither. arr. ed.* 3. 692. *Curt. lond.* 3. 53. 145. *Lightf. scot.* 442. *Hall. belv. n.* 3. *Pollich pal. n.* 755. *Fl. dan. t.* 424. *Villars dauph.* 3. 64. *Krock. files. n.* 1316.
Hieracium minus, dentis leonis folio oblongo glabro. *Baub. pin.* 127. *Mor. hist. f.* 7. t. 4. f. 35. *Raii hist.* 229?
H. parvum in arenosis nascens, feminum pappis densius radiatis. *Raii syn.* 166. *Petiv. brit. t.* 12. f. 4. & t. 11. f. 12.
H. minimum. *Col. ecphr.* 2. 27. 2.
4. *Hypochoeris radicata*. Long-rooted *Hypochoeris*.
Lin. spec. 1140. *syst.* 721. *Reich.* 3. 662. *hort. cliff.* 386. *fl. suec. n.* 709. *Huds. angl.* 347. *Wither. arr. ed.* 3. 692. *Curt. lond.* 3. 52. 152. *Lightf. scot.* 443. *Relb. cant. n.* 580. *Hall. belv. n.* 3. *Pollich pal. n.* 756. *Fl. dan. t.* 150. *D'Affo arag.* 776. *Villars dauph.* 3. 63. *Krock. files. n.* 1317.
Achyrophorus radicans. *Scop. carn. n.* 987. *Gartn. fruct.* 2. 370.
Hieracium dentis leonis folio obtuso, majus. *Baub. pin.* 127. *Mor. hist. f.* 7. t. 4. f. 27.
H. longius radicum. *Lob. obs.* 120. 2. ic. 1. 238. 1. *Ger.* 227. 7. *emac.* 298. 6. *Park. theat.* 790. 1. *Raii hist.* 230. *syn.* 165. *Pet. brit. t.* 11. f. 11.
H. tertium. *Dod. pempt.* 639. 2.
Leaves runcinate obtuse rugged, stem branched naked even, peduncles scaly.
5. *Hypochoeris minima*. Least *Hypochoeris*.
Cyrill. neap. 1. 29. t. 10.
Leaves sinuate-lyrate, stem with scaly appendixes at top.

DESCRIPTIONS, &c.

1. Root perennial, almost fusiform, thickish, somewhat woody, sometimes divided, dark brown on the outside, white within, milky, putting up one, sometimes two or three stems, among abundance of radical leaves. Stem about a span high, straight, thickening towards the top, hollow, round, striated, hirsute, quite simple, always one-flowered. Root-leaves lanceolate, entire with the edges repand-toothed, hirsute above and below, spotted with black but not always. Stem-leaves two or three, remote, sessile, lanceolate, repand-toothletted, flat, hirsute, gradually smaller. Flower very large, from erect spreading. Calyx cylindrical rather than round, very irregular; scales bluntly lanceolate, hirsute, keeled, winged as it were on the sides with a broadish ferrate membrane: some of the outer ones are wholly membranaceous without a keeled back, and these are pushed back within the grooves of the inner scales. Corollets very numerous, long, deep yellow, five-toothed, from erect spreading, with yellowish white villose hairs at the base. Seeds from an ovate base gradually attenuated, naked, with a sessile feathered down at top. Chaffs of the receptacle the length of the calyx, yellow and subserrate towards the top. The plant has no smell^a.

Allioni observes, that the calyx is thicker than in the next species, with which this has been confounded; the stem leafy, the leaves continually smaller and upright; the scales of the calyx not only bearded with black villose hairs, but jagged and ciliate on the edge: whereas in *H. maculata* the leaves are wider, and the root-leaves spread on the ground: the stem almost naked, often branched, and higher; the scales of the calyx not jagged.

According to Monf. Villars, the stem is solitary, two feet high, very thick and villose, with leaves at the bottom, but naked or having a single leaf only, from the middle to the top, where it spreads out, becoming more villose on the outside, and more hollow within. Leaves oblong, villose, pointed and toothed, raised up and not lying on the ground, nor spotted. Calyx very large and villose, composed of large flatted scales, with the lateral membranes cut and jagged irregularly, like some species of *Centaurea*. Seeds very long, fusiform, crowned by a feathered stiped egret. Chaffs longer than the seeds, and almost as high as the hairs of the egret.

Native of the mountains of Carinthia, Dauphiné, and several parts of the Alps.

2. Root thick and long, abounding with milky juice, as does the rest of the plant. Leaves all radical, except the plant becomes luxuriant from cultivation; oblong, somewhat pointed, very irregularly toothed, rough, spotted (as in the stem) with red or brown spots. Stem commonly simple, roughish, with one or two distant, lanceolate bractes, and terminated by one large flower. Outer scales of the calyx rough with black prominent bristles, intermixed with scattered white ones: the inner smooth, yellowish, half as long as the florets, hairy, composed of large scales. The flower opens at six in the morning, and closes at four in the afternoon. Seeds wrinkled. The stem, though generally simple, has sometimes a branch or two.

The leaves are boiled in Smoland and eaten like cabbage; though bitter they are eaten green by animals, particularly those which ruminate, greedily. The country people believe the plant to be a cure for tetters, and other cutaneous eruptions, possibly on account of its spotted leaves^b.

Native of many parts of Europe. In England not common. On Gogmagog hills, Newmarket heath, &c. in Cambridgeshire. Bernack heath, in Northamptonshire. About Malham Cove, Cartmell Wells, and near Settle in Yorkshire, &c. flowering in July, and perennial.

3. Root annual, the thickness of a crow quill, tapering, furnished with few fibres, pale brown. Root-leaves numerous, spread on the ground, about the length and breadth of the little finger, sinuate-toothed,

^a Jacquin misc.

^b Engl. bot. Relh. With. Woodw. Mss.

a little broader at top, smooth, but not perfectly so, the edges particularly being thinly set with stiffish hairs; those on the stem few, and very minute. Stems usually several, about seven inches high, nearly upright, divided into two or three branches, round, almost naked, glaucous. Peduncles scaly, a little thickened under the flower. Flowers very small. Calyx at first cylindrical; but, when the flowering is over, becoming of an oblong conical shape, and large; the scales smooth, ovate-lanceolate, unequal, with red tips. Tube of the corollet with a few stiffish hairs at top; the border five-toothed. Chaffs of the receptacle concave, shining, deciduous. Seeds sublinear, tapering to a point at bottom, chestnut-coloured; viewed with a magnifier finely grooved and rough. Down unequal, stiffish.

The stem is sometimes simple, in the autumn it is much branched and reclining. Leaves shining, and their teeth triangular, sometimes edged with white hairs.

It may be distinguished by the smallness of the flowers, not exceeding the size of a silver threepence, while the heads containing the seeds are altogether as large in proportion to the size of the plant. The flowers are open from about nine in the morning till about one or two in the afternoon. It delights in a gravelly or sandy soil, and exposed situation, and flowers in June.

4. Root perennial, the thickness of the little finger, running deeply into the earth, generally simple, of a whitish colour, and milky within. Root-leaves spread on the ground, oblong-wedged-shaped, waved or toothed, hairy, the hairs simple, upright, and proceeding from little prominent points. Stems often several, from one to two feet high, nearly upright, naked, instead of leaves having only short, ovate, pointed, ciliate scales at the base of each branch; they are very smooth, glaucous, somewhat striated, tough and solid; the scales are lanceolate, with a few white bristly teeth at the base on each side. Peduncles long, beset with a few scales, a little thickened towards the top, one-flowered. Flower large, closing at three in the afternoon. Calyx not distended at the base; scales ovate or linear-lanceolate, pointed, smooth, reddish at top, with a row of short, taper, dark purple bristles along the upper part of the keel. Tube of the corollet hairy at top; border reddish green on the outside, five-toothed. Seeds rough and finely grooved, reddish. Stipe of the down longer than the seed; down rather longer than the stipe. Chaffs linear, long, shining, membranous, concave, tapering and yellow towards the top.

It is distinguished from *Leontodon autumnale* by the length of the root, whence it derives the trivial name; and is common on dry banks, heaths and pastures, flowering from May to September; in the early part of summer it is a conspicuous plant.

In barren soils it occurs of a much smaller size, five or six inches high, with an unbranched stem, or with one flower almost sessile on the side.

These plants are named Hawkweed in English, in common with many others; Dr. Withering calls them *Cat's-ears*.

5. Root downright, two or three inches long, annual, fibrous. Root-leaves decumbent, somewhat rugged. Stem naked, simple, one-flowered, or sometimes divided into two or three one-flowered branchlets: towards the top are some small, linear scales, pressed close to the stem, and mortified at the sides. Stem a palm in height, smooth. Flower small, equal. Calyx almost calyculate; scales unequal, acute, mortified at top. The flowers are open from eleven in the morning to two in the afternoon. Seeds in the circumference with a sessile simple down; in the disk they are on a very long stipe. Chaffs of the receptacle minute.

Native of Italy, near Naples, on volcanic ground, particularly the Solfatara; flowering from May to July.

^c Curtis.

^d With. & Woodw.

^e Curtis.

^f Curtis, Withering, Woodw. Mss.

^g Cyrillo.

HYPOCHÆRIS. See *Seriola*.

HYPOXIS. (ὑπόξις, *leviter acuminatus, subacutus, sharpish*.)

Lin. gen. n. 417. Reich. 450. Schreb. n. 565.

Gärtn. t. 11. Juss. 35.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Coronariae*.—*Narcissi*, Juss.

GENERIC CHARACTER.

CAL. Glume two-valved.

COR. one-petalled, superior: limb six-parted; segments ovate-oblong, spreading: permanent.

STAM. Filaments six, very short, capillary. Anthers oblong, shorter than the petals.

PIST. Germ inferior, turbinate. Style filiform, the length of the stamens. Stigma bluntish.

PER. Capsule somewhat oblong, narrower at the base, crowned with the permanent corolla, three-celled, three-valved. (valveless. G.)

SEEDS very many, roundish.

ESSENTIAL CHARACTER.

Cal. a two-valved glume. Cor. six-parted, permanent, superior. Caps. narrower at the base.

SPECIES.

1. *Hypoxis erecta*. Upright *Hypoxis*.

Lin. spec. 439. Juss. 326. Reich. 2. 51.

H. juncea. Smith. spicil. 15. t. 16.

Ornithogalum hirsutum. Lin. spec. ed. 1. 306. Gron.

virg. 1. 37. & 2. 51. Catesb. car. 1. 33. Pet.

gaz. t. 1. f. 11. Pluk. phyt. t. 350. f. 8.

Hairy, with ovate capsules.

2. *Hypoxis decumbens*. Trailing *Hypoxis*.

Lin. spec. 439. Reich. 2. 52. amoen. 5. 396.

Swartz. obs. 126. Brown. jam. 195. (*Ornithogalum*).

Plum. ic. 108. f. 2.

Anthericum sessile. Mill. fig. t. 39. f. 2.

Hairy, with club-shaped capsules.

3. *Hypoxis spicata*. Spiked *Hypoxis*.

Thunb. jap. 136. Lin. Juss. 326.

Upright, leaves ensiform, falcate, smooth, flowers in spikes.

4. *Hypoxis plicata*. Plaited-leaved *Hypoxis*.

Lin. suppl. 197. Juss. 326. Ait. hort. kew. 1. 438.

Fabricia plicata. Thunb. in Fabric. it. norveg. 29.

Scape one-flowered, three-sided, leaves lanceolate, plaited, villose.

5. *Hypoxis stellata*. Spotted-flowered *Hypoxis*.

Lin. suppl. 197. Juss. 326. Hort. kew. 1. 438.

Fabricia stellata. Thunb. in Fabric. it. norveg. 27.

Amaryllis capensis. Lin. spec. 420. Juss. 319. Reich.

2. 25. mant. 363.

Scape one-flowered, leaves linear, striated, petals spotted.

6. *Hypoxis aquatica*. Aquatic *Hypoxis*.

Lin. suppl. 197. Juss. 326. Hort. kew. 1. 439.

Leaves linear, scapes umbelled or one-flowered.

7. *Hypoxis ferrata*. Channel-leaved *Hypoxis*.

Lin. suppl. 197. Juss. 326. Hort. kew. 1. 439.

Fabricia ferrata. Thunb. in Fabric. it. norveg. 29.

Leaves channelled, smooth, ciliate-ferrate, scapes one-flowered.

8. *Hypoxis villosa*. Hairy *Hypoxis*.

Lin. suppl. 198. Juss. 326. Hort. kew. 1. 439.

H. *Fabricia*. Gärtn. fruct. 1. 33.

Fabricia villosa. Thunb. in Fabric. it. norveg. 31.

Leaves linear-ensiform, villose, stigma simple, three-cornered, acute.

9. *Hypoxis fascicularis*.

Lin. spec. 439. Reich. 2. 52. Russ. alepp. 34.

t. 2. 9. (Allium.)

Tube of the flowers very long.

10. *Hypoxis sessilis*.

Lin. spec. 439. Reich. 2. 52. Dill. elth. 298. t.

220. f. 287. (*Ornithogalum*).

Hairy, stemless, fructifications subradical, leaves linear, straight.

11. *Hypoxis minuta*.

Lin. suppl. 197. Juss. 326.

Helonias minuta. Lin. mant. 225. Juss. ed. 13. 288.

Leaves three-sided, fleshy, smooth, scapes bifid.

12. *Hypoxis ovata*.

Lin. suppl. 197. Juss. 326.

Leaves ovate-lanceolate, entire, smooth, scapes one-flowered.

13. *Hypoxis*

13. *Hypoxis alba*.*Lin. suppl.* 198. *fig.* 326.*Leaves cylindric, smooth, scapes subbifid, petals unspotted.*14. *Hypoxis aurea*.*Lour. cochinch.* 200.*Stemless, hairy, scape one-flowered, capsules oblong.*

DESCRIPTIONS, &c.

1. Leaves like those of *Carex* or *Juncus pilosus*. Scape shorter than the leaves, upright, hairy. Bractes two, awl-shaped, upright, between which is one sessile flower (sometimes two) the length of the bractes^a.

Hypoxis juncea or Rushy *Hypoxis* of Dr. Smith, found by Mr. John Frazer in boggy ground in Carolina, does not seem to be a different species, although the scapes are single-flowered, as in Smith's and Catesby's figures; whereas in those of Petiver and Plukenet, referred to by Linneus, two flowers are represented together. It is thus described by Dr. Smith.

Root tufted, with fleshy branched fibres. Leaves radical, several, rushy, a span long, erect, a little recurved at the top, linear, pointed, entire, keeled; channelled and bare on the upper side, hairy on the back; dilated and sheath-like at the base. Stems two or three, shorter than the leaves, upright, round, hairy, reddish above, each bearing one upright flower, in size and appearance like that of *Ornithogalum luteum*. Corolla externally green and hairy, with a red rib; internally concave, yellow, smooth, without veins or nerves. Stamens much shorter than the corolla: filaments cylindrical, three a little longer than the other three: anthers oblong, incumbent, cloven at the base, after discharging their pollen becoming shorter and almost round. Germ obconical, slender, scarcely perceptible till after flowering: style very short: stigma triangular, feathery.

Native of North America. Introduced in 1784, by Mr. William Young. It flowers in June^b.

2. Bulb roundish, fleshy, brown, putting out fibres from the side. Leaves radical, sheathing at the base, forming as it were a short stem, grassy, keeled, a span long, recurved, sharp, striated, somewhat hairy. Peduncles radical from the sheaths among the leaves, about flowering time short, but afterwards lengthened out, filiform, two-edged, few-flowered. Spathes two-leaved; leaves small, linear, pubescent. The three outer parts of the corolla lanceolate, acute, hairy on the outside, permanent; the three inner smooth, yellow, greenish on the outside, withering. Stamens alternate with the segments of the corolla, three longer, three shorter; anthers sagittate. Germ oblong: style awl-shaped: stigma blunt. Capsule oblong, three-cornered, crooked, rough with hairs, crowned with the permanent corolla. Seeds wrinkled, black^c.

Native of Jamaica, in sandy fields among the mountains. The roots came accidentally to Mr. Miller among some plants of Allspice^d; and he cultivated them in 1755. It flowers most part of the year^e.

3. Root composed of capillary fibres in bundles. Leaves radical, many, entire, three-nerved, shorter than the scape, a span in length. Scape filiform, slightly angular, flexuose, upright, villose, a foot high. Flowers from the middle to the top of the scape, in spikes, alternate, remote, very many. Capsule and rachis very rough with hairs. Native of Japan; flowering in May and June^f.

4. Bulb globular. Leaves ensiform, subciliate, toothletted at the base, on the keel and about the edge. Scapes leafless, without bractes. Spathe hidden. Corolla yellow, green on the outside. Anthers bifid at the base. Native of the Cape of Good Hope, on sandy hills: found there by Thunberg^g. Introduced in 1788, by Mr. Francis Masson^h.

5. This is a beautiful little bulbous plant, with a dark spot at the claws of the petals. It was first named *Amaryllis capensis* by Linneus, and is thus

^a Linn. *fig.*^b Hort. kew.^c Swartz.^d Mill. *fig.*^e Hort. kew.^f Thunberg.^g Ibid.^h Hort. kew.

described in the *Amoenitates Academicæ*.—Leaves like those of *Narcissus*, the length of the scape, which is sheathed below the middle; the spathe permanent, acuminate, flat; petals lanceolate, black at the base within; filaments very short; anthers erect, shorter by half than the petals; style three-cornered, the length of the anthers, with three stigmas. *Amaryllis capensis* of Miller is different. Reichard refers to *A. vernalis* of Miller as the same with this; but Miller makes that to be a native of Spain and Portugal.

Native of the Cape of Good Hope, where it was observed by Thunbergⁱ. It was introduced in 1788, by Mr. Francis Masson^k.

6. Leaves radical, loose, bending at the end. Scapes filiform, the height of the water. Flowers in some solitary, hermaphrodite; in others umbelled, male. Native of the Cape of Good Hope in watery ditches^l. Introduced in 1787, by Mr. Francis Masson^m.

7. This also was found at the Cape of Good Hope by Thunbergⁿ; and was introduced by Masson in 1788. It flowers in July^o.

8. Capsule small, narrower at the base so as to be almost club-shaped, knobbed with the protuberating seeds, villose, membranaceous, very thin, valveless, of a herbaceous colour on the outside, within smooth and coloured. Partitions very thin, fixed to the axis and walls of the capsule. Seeds two or three only in each cell, subglobular, black, small, rendered a little rugged by very minute raised dots, fixed to the inner angle of the cells in a single row. Embryo straight, the length of half the albumen^p.

It varies in size, and is a native of the Cape of Good Hope^q. It was found there by Mr. Francis Masson; was introduced in 1774, and flowers most part of the summer^r.

9. Native of the country about Aleppo.

10. Leaves several, a long span in length, keeled, like those of *Juncus pilosus*, hairy all over, but most conspicuously round the edge, pale green on both sides. Among the leaves, at bottom, spring out sessile oblong heads, bluntly three-cornered, at the top of which are the flowers. Petals pointed, plaited; three outer, broader, green, hairy; three inner narrower, smooth, yellowish green. Stamens inclosed within the corolla, which kept close, or opened very little. Seeds round, black, shining. It flowers at the end of June, and in July. Native of Carolina, whence it came in the earth with other plants, and was cultivated in the Eltham garden before 1732^s.

11. Bulb conical, large in proportion to the plant, truncated and margined beneath, and having linear converging scales at top. Leaves radical, somewhat fleshy, acute, longer than the scapes, a finger's length. Scapes several, very short, almost cylindrical, involved in scales at the base; branches or pedicels one-flowered. Corolla spreading, snow-white. Filaments shorter than the corolla. Anthers hastate, upright, longer than the filaments. Germ oblong. Styles three, membranaceous, adhering to the germ in a pyramidal form. Native of the Cape of Good Hope, where it was found by Koenig^t.

12. Flower white and pretty. Found at the Cape of Good Hope by Thunberg.

13. This is a little plant, found also at the Cape by Thunberg^u.

14. This is an annual plant. Leaves awl-shaped, channelled, reflex, half a foot long, clustered. Scape round, slender, equal to the leaves. Corolla bell-shaped, equal, golden-coloured within, greenish on the outside, hairy. Capsule oblong, three-sided, hairy. Native of Cochinchina, on a sandy hill called Son Koung^v.

PROPAGATION AND CULTURE.

For the Cape forts (4 to 8, 11, 12, 13.) see *Albuca*.

2. Trailing *Hypoxis* will not thrive well in England, unless the pots be plunged into a hot-bed of tanner's^w

ⁱ Linn. *suppl.* & *mant.*^k Hort. kew.^j Linn. *suppl.*^m Hort. kew.ⁿ Linn. *suppl.*^o Hort. kew.^p Gartner.^q Linn. *suppl.*^r Hort. kew.^s Dillenius.^t Linn. *mant.*^u Linn. *suppl.*^v Loureiro.

bark, and the air kept up to the heat assigned for Ananas. In this situation the plants will thrive, produce plenty of flowers, and perfect their seeds, which if suffered to scatter on the pots will produce plenty of young plants; or if they be sown in pots soon after they are ripe, and planted into the tan-bed, they will come up in about six weeks, and when they are fit to transplant may be treated in the same manner as the old plants.

HYPOXIS. See *Ornithogalum*.

HYPOXYLON. See *Clavaria*.

HYPTIS. (So named by Jacquin, from the resupinate (υπὲρ) limb of the corolla.)

Lin. gen. Schreb. n. 969. Jacquin. collect. 1. 101.

Juss. 449.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Verticillata*.—*Labiata*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* turbinate, half-five-cleft, permanent: segments lanceolate, acute, almost equal, upright.

COR. one-petalled, ringent. Tube funnel-form: throat widened; limb spreading very much, resupinate: upper lip (in situation the lower) trifid; lateral segments ovate, acute, the middle one roundish, concave, obtuse: lower lip (in situation the upper) femibifid; segments semiovate, flat, acute.

STAM. Filaments four, awl-shaped, erect, of which two are shorter, Anthers twin, hanging down.

PIST. Germ four-cleft. Style filiform. Stigma bifid or simple.

PER. none. Calyx fostering the seeds.

SEEDS four.

ESSENTIAL CHARACTER.

Cal. turbinate. Cor. with a very spreading border; lower lip femibifid. Anthers hanging down.

SPECIES.

1. *Hyptis verticillata*.

Jacquin. collect. 1. 101.

Leaves lanceolate, flowers in whorls.

2. *Hyptis capitata*.

Jacquin. collect. 1. 102. Plum. cat. 6. ic. 155. t. 163. f. 2. (Melissa.)

Leaves ovate, flowers in heads.

DESCRIPTIONS.

1. This is a shrub ten feet in height, with one or two upright stems, near an inch in diameter, smooth, brownish ash-coloured, round and woody; but the younger branches are four-cornered and herbaceous. Leaves opposite, petioled, long-lanceolate, acute, unequally ferrate, smoothish, from three to six inches in length. Whorls on the younger branches at the leaves sessile, six-flowered. Corolla white, with the segments of the upper lip purple in the disk. Calyx a little hispid on the back, and at the edges of the segments. Anthers pale yellow. Native of St. Domingo.

2. Stems suffruticose, two or three feet high or more, becoming woody, commonly four-cornered, brown. Branches annual, herbaceous, subdivided, four-cornered, roughish, two feet long. Leaves opposite, petioled, ovate, but with a sharp base, veined, unequally ferrate, acute, a little hairy on both sides when viewed with a glass, dark green; the lower ones wrinkled, the largest seven inches long. Peduncles, axillary, solitary, four-cornered, slender, from two to three inches long, bearing at the end numerous flowers collected closely into a semiglobular head, supported underneath by an involucre composed of many lanceolate leaflets. The tube of the corolla is a little hairy on the outside, but most so on the back of the helmet. The whole petal is white, with sometimes a tinge of flesh-colour. Calyx green, and a little hispid. Anthers yellow. The whole plant is inodorous. Native of St. Domingo, flowering there in december and january.

HYSSOP. See *Hyssopus*.

— Hedge. See *Gratiola*.

HYSSOPIFOLIA. See *Lythrum*.

HYSSOPIUM. See *Teucrium*.]

HYSSOPUS. (ὑσσωπος. of Dioscorides. *Hyssopus* of Pliny. — So called q. υομενον (for χευομενον) ἐπὶ τοῦ ὡπα; but more probably from the Hebrew.)

Lin. gen. n. 709. Reich. 767. Schreb. n. 963.

Tournef. t. 95.

Mill. fig.

2 Jacquin.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Verticillata*.—*Labiata*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, cylindrical, oblong, striated, acutely five-toothed, permanent.

COR. one-petalled, ringent. Tube cylindrical, slender, the length of the calyx: throat inclined: upper lip straight, flat, short, roundish, emarginate: lower lip trifid; lateral segments shorter, blunt, the middle one crenate, obcordate, acute, with distant lobes.

STAM. Filaments four, upright, longer than the corolla, distant; the two upper ones shorter, but the two longer nearer to the lower lip. Anthers simple.

PIST. Germ four-parted. Style filiform, under the upper lip, and of the same length. Stigma bifid.

PER. none. Calyx fostering the seeds.

SEEDS four, subovate.

ESSENTIAL CHARACTER.

Cor. lower lip with a small middle crenate segment.

Stam. straight, distant.

SPECIES.

1. *Hyssopus officinalis*. Common *Hyssop*.

Lin. spec. 796. syst. 529. Reich. 3. 29. mat. med.

145. Woodv. med. bot. 181. t. 65. hort. cliff.

304. 1. upf. 152. Gouan hort. 274. illustr. 35.

Pallas it. 2. 507. Jacquin. austr. 3. t. 254. Gmel.

fib. 3. 244. Hall. herb. n. 249. Blackw. herb.

t. 296. Rivin. mon. t. 68. Sabb. hort. 3. t. 79.

Berg. phyt. 2. 87.

H. officinarum caerulea f. spicata. Baub. pin. 217.

H. vulgaris. Dod. pempt. 287. Park. theat. 1. f. 1.

—spicatus angustifolius. Baub. hist. 3. 274. Raii hist. 516.

H. arabum. Ger. 464. 1. emac. 579. 1.

α. fol. glabris, flor. caeruleis. Blue-flowered *Hyssop*.

β. fol. glabris, flor. rubris. Red-flowered *Hyssop*.

Ger. 464. 2. emac. 579. 2.

H. rubra. Mill. dict. n. 2.—rubore flore. Baub. pin. 217.

γ. fol. glabris, flor. albis. White-flowered *Hyssop*. Ger.

464. 3. emac. 579. 3.

δ. fol. pilosis. Hairy *Hyssop*.

H. hirsuta. Baub. pin. 217.—fol. cinereis. Park.

parad. 455.

Spikes directed one way, leaves lanceolate.

2. *Hyssopus Lophanthus*. Mint-leaved *Hyssop*.

Lin. spec. 796. syst. 529. Reich. 3. 29. hort. upf.

162. Jacquin. hort. 2. t. 182. Comm. gott. 2. 344.

t. 14.

Cataria floribus inversis. Hall. gott. 338.

Corollas resupinate, lower stamens shorter than the corolla, leaves cordate.

3. *Hyssopus Nepetoides*. Square-stalked *Hyssop*.

Lin. spec. 796. syst. 529. Reich. 3. 29. hort. upf.

163. Gouan illustr. 35. Jacquin. hort. t. 69.

Gron. virg. 2. 88.—vir. cliff. 58. Gron. virg.

1. 66. Herm. par. 106. (Nepeta). hort. cliff.

316. (Brunella).

Betonica virginiana elatior, fol. scrophulariae glabris,

flore ochroleuco. Pluk. phyt. t. 150. f. 3. Mor.

hist. 3. 365. f. 11. t. 4. f. 11. Herm. par. t. 106.

Stem sharp, quadrangular.

DESCRIPTIONS, &c.

1. Height a foot and half. Stems first square, afterwards round, with small sessile leaves in pairs on their lower part, and seven or eight very narrow erect leaves or bractes, springing from the same joint: on the upper part flowers in whorls, the lower ones half an inch apart, the upper almost joined. Anthers twin. Seeds black. The whole plant has a strong aromatic scent. It flowers in july and august, and the seeds ripen in september. The roots will abide many years.

[Root woody, hard, the thickness of a finger. Stems very numerous, from a foot to eighteen inches high, shrubby, straight, not much branched, whilst tender square, but becoming round as they grow woody. Leaves numerous, narrow, smooth, entire, like those of Lavender, but much shorter, acute, dotted. Whorls of flowers from the bosoms of the leaves, on two many-flowered peduncles shorter than the leaf, directed one way, and continued into a spike. Corolla blue, varying to red and white.

Ray & Haller.

Native of the South of Europe, and Siberia, Miller says the Levant. Cultivated in 1596 by Gerarde^b.

There are many varieties of Hyssop; Ray enumerates nine from Parkinson and others. Mr. Miller makes that with red flowers to be a distinct species,] not growing so tall as the common sort with blue flowers, branching more; the spikes of flowers much shorter, the whorls closer, having long narrow leaves under each; the corolla of a fine red colour. It is more tender, all the plants having been destroyed in the severe winter of 1739. That with white flowers does not differ from the blue in any other particular.

[Hairy Hyssop, which Parkinson calls Russet Hyssop, differs no otherwise than in the woollyness of the stem and leaves, giving them an ash or russet colour.

The leaves vary in colour as well as the flowers, some being white, striped with white, or half green, half white. *H. fol. niveis. Park. parad. 455.*—Others with the leaves wholly yellow, or but a little green in them. *H. aureus*; yellow or golden Hyssop of Parkinson; which he says is of so pleasant a colour, that it provokes many Gentlemen to wear them in their heads and on their arms, with as much delight as many fine flowers can give. The leaves are also sometimes curled, or crumpled at the edges, as Parkinson speaks, so that each leaf seemeth to be composed of many: or jagged and dented, *foliis crenatis*: or larger and broader, on more woody stalks. *H. latifolia* of Parkinson^c.

Hyssop also varies in the stem, which is sometimes much higher than common;] hence *H. altissimus* of Miller, n. 3., which besides having a much taller stem, has narrower leaves, the whorls farther asunder, the spikes much longer, the flowers larger, and of a deeper blue, and the plant less odorous. [Sometimes it is lower; as in *H. minor* and *humilior myrrhi folio* of Tournefort, which has the leaves a little blunter and shorter than in the common sort^d: *H. minor f. hispanica* of Parkinson; *H. parva angustis foliis* of Lobel; and *H. furculis densis*, or double Hyssop of Parkinson, which is not only of lower growth, but is more branched, slenderer, and not so woody, leaning towards the ground, more thick set with leaves, which are of a darker green, and thicker consistence. He recommends it as fit to border a knot of herbs or flowers, because it will abide, and not grow too woody or great, nor be thin of leaves in any part, but may be kept cutting smooth and flat.

Although the flowers commonly are directed all one way, yet sometimes they point two different ways; hence *H. utrinque florifera* of Dodonæus.

And lastly, the scent is sometimes stronger than common, approaching to that of Musk: hence *H. moschata vel de Cilissia*, or musked Hyssop of Parkinson.]

2. Root strong, fibrous, perennial, sending out many square stalks, which divide into smaller branches. Leaves oblong, crenate. Flowers produced at each joint in small clusters; two peduncles springing from the base of the leaves, about half an inch long, both inclining to one side of the stalk; each of these divides again into two smaller, and these each support a cluster of four or five flowers, with swelling tubulous calyxes. The tube of the corolla is longer than the calyx; the lips are oblique to it, being placed horizontally; the colour is blue. The flowers appear in June and July, and the seeds ripen in September.

It grows naturally in Siberia. The seeds were sent to Mr. Miller from the imperial garden at Petersburg, and afterwards from Holland. [He cultivated it in 1759^e.]

3. Root perennial. Stem upright, near four feet high. Leaves oblique heart-shaped, serrate, acute, on short foot-stalks. Flowers yellow, in close thick spikes four or five inches long. Upper lip of the corolla divided into two roundish segments; the two side segments of the lower lip erect, the middle one reflex, acutely serrate at the end. Seeds brown.

[Native of Virginia and Canada. Cultivated in 1692, in the Botanic Garden at Oxford^f.

^b Hort. kew.

^c Theat. p. 2.

^d Gouan. illustr.

^e Hort. kew.

^f Ibid.

Gouan remarks that it has the appearance of Galeopsis; that the stem is either green and very even, with smooth leaves; or hairy, tinged with purple, and hairy leaves; that the spikes are cylindrical, nearly as thick as the little finger, three inches long, very smooth and close; that the bractes are large and cordate-ovate; and that there are from four to eight flowers to each bracte.]

There is a variety with purple stalks and flowers, the leaves on longer foot-stalks, and the spikes of flowers thicker.

PROPAGATION AND CULTURE.

1. Common Hyssop with all its varieties may be propagated either by seeds or cuttings; if by seeds, they must be sown in March, upon a bed of light sandy soil, and when the plants come up, they should be transplanted out to the places where they are to remain, placing them at least a foot asunder each way; but if they are designed to abide in those places for a long time, two feet distance will be small enough, for they grow pretty large, especially if they are not frequently cut, to keep them within compass. If you would propagate them by cuttings, they should be planted in April or May, in a border where they may be defended from the violent heat of the sun; and being frequently watered, they will take root in about two months; after which, they may be transplanted where they are to continue, managing them as was before directed for the seedling plants.

They are very hardy plants, which will endure the cold of our winters in the open air, provided they are planted in a dry undunged soil; for when they are planted in a rich soil, they grow very luxuriant in summer, and are less able to resist the cold in winter; so that when any of these plants grow out of the joints of old walls, as they frequently do, they will resist the most severe frost, and will be much more aromatic than those which grow in a rich soil.

2, 3. Both these sorts are also very hardy, and may be easily propagated by seeds sown in autumn, for those sown in the spring often lie a year in the ground before they vegetate: when the plants come up, keep them clean from weeds, and thin them where they are too close. The following autumn transplant them where they are to remain, and the roots will abide several years.

[HYSSOPUS. See *Dracocephalum*, *Rhinanthus*, *Sideritis*, *Thymra*.

HYSTEROPHORUS. See *Parthenium*.

HYSTRIX. See *Barleria* & *Elymus*.

I.

JABORANDI. See *Piper*.

JABOTAPITA. See *Gomphia* and *Ochna*.

JACA TREE. See *Artocarpus*.

JACAPUCAYA. See *Lecythis*.]

JACEA. See *Carduus*, *Centaurea* [*Gorteria*, *Serratula*, *Stachelina*, *Viola*, *Xeranthemum*.

JACK IN A BOX. See *Hernandia*.]

JACOBÆA. See [*Arctotis*, *Athanasia*, *Cineraria*, *Conyza*, *Cotula*, *Crepis*, *Erigeron*, *Eupatorium*, *Inula*], *Othonna*, [*Pectis*], *Senecio*.

[JACOBÆASTRUM and JACOBÆOIDES. See *Cineraria*.]

JACQUINIA. (So named by Linneus, in honour of Nic. Jof. de Jacquin, Professor of Botany at Vienna, born at Leyden in 1727, and author of many splendid works.)

Lin. gen. n. 254. Reich. 274. Schreb. 346. Jacqu. amer. 53. Juss. 151.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Dumosa*?—*Sapota*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets roundish, concave, permanent.

COR. one-petalled. *Tube* bell-shaped, ventricose, longer than the calyx. *Border* ten-cleft: *divisions* roundish, of which the five interior ones are shorter.

STAM. *Filaments* five, awl-shaped, arising from the receptacle. *Antbers* spear-shaped.

PIST. *Germ* ovate. *Style* the length of the stamens. *Stigma* headed.

PER. *Berry* roundish, acuminate, one-celled.

SEED single, roundish, cartilaginous.

ESSENTIAL CHARACTER.

Cor. ten-cleft. *Stam.* inserted into the receptacle.
Berry one-seeded.

SPECIES.

1. *Jacquinia armillaris*. *Obtuse-leaved Jacquinia*.
Lin. spec. 272. *syst.* 229. *Reich.* 1. 527. *Jacqu. amer.* 53. t. 39. *piet.* 31. t. 56. *Swartz. obs.* 85.

Chrysophyllum Barbasco. *Loefl. it.* 204. 277.

Xylocyfte fruticosum, &c. *Brown. jam.* 372.

Arbor baccifera laurifolia, &c. *Sloan. jam.* 2. 89. t. 190. f. 2.

Leaves obtuse, coriaceous, flowers in racemes, berries four-seeded or thereabouts.

- [2. *Jacquinia venosa*. *Vein-leaved Jacquinia*.

Swartz. prodr. 47.

Leaves ovate, lanceolate, veined, submembranaceous.]

3. *Jacquinia ruscifolia*. *Prickly Jacquinia*.

Lin. spec. 271. *syst.* 229. *Reich.* 1. 527. *Jacqu. amer.* 55. *piet.* 32. t. 57.

Medeola aculeata. *Lin. spec. ed.* 1. 339.

Fruticulus fol. rusci stellatis. *Dill. elth.* 148. t. 123. f. 149.

Leaves lanceolate, acuminate.

4. *Jacquinia linearis*. *Linear-leaved Jacquinia*.

Lin. spec. 272. *syst.* 229. *Reich.* 1. 527. *Jacqu. amer.* 54. t. 40. f. 1. *piet.* 32. t. 32. f. 58.

Leaves linear, acuminate.

DESCRIPTIONS, &c.

1. [This is a very elegant upright shrub, seldom more than four or five feet high. Trunk round, thicker and knobbed where the branches come out, covered with an ash-coloured bark. Branches four or five from each joint towards the top, in whorls, spreading, stiff, round, grooved, brittle, hoary, subdivided, and forming all together a neat globular head. Leaves scattered, alternate, petioled, clustered towards the ends of the twigs, wedge-shaped, ovate, obtusely margined, quite entire, veinless, smooth, pale underneath, with very minute black dots. According to Jacquin, they are of different shapes between oblong and roundish, sometimes blunt, sometimes emarginate, but always with a little rigid point, rigid, narrowing into a very short petiole, and sometimes rolled back at the sides. Racemes terminating, commonly shorter than the leaves, about two inches long, solitary, erect, loose, simple, seven-flowered or thereabouts. Peduncles scattered, spreading, one-flowered. Flowers small, stiffish, white, smelling like Jasmine, and retaining their sweet scent several days. Tube of the corolla narrower at the base, dilated above; the five outer segments are spreading and oblong, the five inner inserted into the throat between the outer ones, roundish, crenulate, erect. Filaments from the base of the corolla, shorter than the tube: anthers ovate, white. Germ superior: style short, permanent: stigma blunt, purple. Berry roundish, smooth, the size of a large pea, of a reddish orange-colour, and containing an orange-coloured pulp. Seeds four, sometimes, but seldom, three or five, ovate, smooth, shining, cartilaginous, brownish yellow. The berries are eaten by small birds, and the seeds are strung for bracelets by the Caribees, whence the French in the islands call this shrub *Bois bracelets*, and Linneus gave it the trivial name of *armillaris*. The Spaniards call it *Barbasco* or *Verbasum*.

Native of South-America and the West-India islands; on the calcareous rocks of Jamaica, on the coast, flowering in february and march; in Curaçoa, Martinico, Carthagen, &c.

Cultivated by Mr. Miller in 1768^b.

2. Native of the West-Indies^c.

^a Swartz & Jacquin.

^b Hort. kew.

^c Swartz.

3. This is a shrub three feet in height, with all the habit of the preceding. It differs in having the leaves lanceolate, acuminate, pungent, extremely stiff, and shorter. The peduncles are pendulous as in that, and one-flowered. Native of South-America. Jacquin observed it at the Havannah in mountain woods, flowering in january and february^d. It was cultivated in 1729, by James Sherard, M.D.^e

4. This is a shrub two feet in height, very much branched, of the same habit with the two preceding, but not so neat. Leaves extremely rigid, pungent like thorns, often twisted, subseffile, an inch long, most frequently four together in whorls at each joint. Peduncles one-flowered, solitary, terminating, pendulous, shorter than the leaves. Flowers stiffish, and without any smell. Petals white, with all the segments convex, the outer ones spreading, the inner almost erect. Berries yellow.

Native of the island of St. Domingo, about Port au Prince, on the coast, flowering and fruiting in january^f.]

PROPAGATION AND CULTURE.

These plants must be kept in the bark stove, giving them little water in winter, and in warm weather plenty of fresh air. They are raised from seeds, procured from the countries where they grow naturally, and afterwards from cuttings; but it is with difficulty that these take root.

[JACQUINIA. See *Trilix*.

JALAPA. See *Convolvulus* &] *Mirabilis*.

{ JAMBOLANA }
and { See *Calyptanthus*.
JAMBOLIFERA. }

JAMBOS and JAMBOSA. See *Eugenia*.

JAMBUSA. See *Gmelina*.

JAMMA GOBA. See *Phytolacca*.

JANIPHA. See *Gardenia* & *Jatropha*.

JAN-RAIA. See *Rajania*.

JAPARANDIBA. See *Gustavia*.

JAPOTAPITA. See *Ochna*.]

JASIONE. (From *σῖος* for *σεος*, and *ια*, *viola*; the divine violet. Linn.—*Ἰασίων* of Theophrastus, and *Jasione* of Pliny.)

Lin. gen. n. 1005. [*Reich.* 1090. *Schreb.* 1362.

Juss. 166. *Gartn.* t. 30.

Class. 19. 6. Syngenesia Monogamia.

Nat. order of *Campanaceæ*.—*Campanulaceæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* common ten-leaved: *alternate leaflets* interior, narrower, including very many flowers on very short peduncles; permanent.

Perianth proper five-cleft, superior, permanent.

COR. proper one-petalled, regular, deeply five-cleft; *divisions* lanceolate, upright.

STAM. *Filaments* five, awl-shaped, short. *Antbers* five, oblong, connected at the base.

PIST. *Germ* roundish, inferior. *Style* filiform, length of the corolla. *Stigma* bifid.

PER. *Capsule* roundish, five-cornered, crowned with the proper calyx, subbilocular, gaping at the tip with a round hole. *Partition* divided at the axis.

SEEDS many, subovate. *Receptacle* subglobose, pedicelled, free, in the base of the capsule.

OBS. *The central floscules* are often abortive: with an undivided club-shaped stigma.

ESSENTIAL CHARACTER.

Cal. common ten-leaved. *Cor.* five-petalled, regular. *Caps.* inferior, two-celled.

SPECIES.

1. *Jasione montana*. *Mountain Jasione* or *hairy Sheep's Scabious*.

Lin. spec. 1317. *syst.* 799. *ed.* 13. 392. *Reich.*

3. 953. *hort. cliff.* 426. *fl. suec. n.* 782. *Gartn.*

fruct. 1. 149. *Huds. angl.* 377. *Wither. arr.*

949. *ed.* 3. 247. *Curt. lond.* 4. 58. 245. *Lightf.*

scot. 504. *Relb. cant. n.* 638. *Jacqu. vind.* 289.

Gmel. sib. 2. 216. *Neck. gallob.* 365. *Leers*

herborn. n. 681. *Pollich. pal. n.* 834. *Fl. dan.*

t. 319. *Villars. dauph.* 2. 673. *Krock. files.*

n. 1477. *Sabb. hort.* 1. t. 76. *Loes. pruss.*

t. 73.

^d Jacquin.

^e Hort. kew.

^f Jacquin.

Rapunculus. *Hall. belv. n.* 678.—scabiosæ capitulo cæruleo. *Baub. pin.* 92. *Park. theat.* 646. *Raii hist.* 744. *syn.* 278. *Petiv. brit. t.* 55. *f.* 2.—corniculatus scab. capit. cæruleo. *Mor. hist. f.* 5. *t.* 5. *f.* 48.

Rapuntium montanum capitatum leptophyllum. *Col. ecphr.* 1. 226. *t.* 227.

Scabiosa. *Dod. pempt.* 122. 2.—minima hirsuta. *Ger. emac.* 723. 12.—globularis. *Baub. hist.* 3. 12.—media. *Lob. obs.* 291. 3. *ic.* 1. 536. 2.

Aphyllanthes. *Dalech. hist.* 804.

β. perennis. *Perennial Jasmine.*

Lin. suppl. 392. *syn.* 799.

DESCRIPTION, &c.

Root annual, rigid, whitish and fibrous. Stems many, erect or procumbent, from a span to a foot in height or more, somewhat rigid, beset with short rough hairs, angular, striated, green, often tinged with purple; for something more than one third of their height, they are clothed with numerous leaves, which are linear or linear-lanceolate, waved at the margins, bluntish at the end, hairy on both surfaces, sessile, and pointing upwards: the remainder of the stem is naked, and terminated by one flowering head. Several alternate branches, much shorter and more slender than the stem, arise among the upper leaves, each bearing also one head of flowers. Outer scales of the calyx ovate-lanceolate, obtuse, with two or three teeth on each margin, hairy towards the base; inner lanceolate, toothed. Proper calyx of five bristle-shaped segments. Corolla blue, sometimes varying to white. Stigma club-shaped, purple^a. Capsule membranaceous, very thin, pyramidal-ovate, two-celled: partition fastened only to the walls of the capsule. Seeds slender, ovate-oblong, very smooth, shining, of a pale chestnut colour. It differs not only from *Phyteuma*, but from all the Campanaceous plants, by having the partition cloven at the axis^b.

Linneus remarks that the leaves are obscurely serrated. Leers affirms that the calyx has constantly twenty leaflets, in four rows, subserrated, the outer ones gradually larger. The anthers are at first almost wholly united, but when the pollen is evacuated they spread, and are joined only at the base. The central florets are barren, with the stigma club-shaped, quite entire, having pollen scattered over it, and not villose: the capsules are on very short pedicels, and never ripen. The lateral florets, in greater numbers, are fertile; these have also a club-shaped stigma, which becomes afterwards bifid: because the anthers of these have evacuated their pollen before the stigma bursts, it seems probable that the fecundation is made by the anthers of the barren florets. The styles of the barren florets are all upright; but those of the fertile ones are bent down, for the easier reception of the pollen. In this curious account of the process of fecundation in this plant, the botanist cannot but remark the affinity that it bears in this circumstance to the genuine plants of the class Syngenesia, where Linneus placed it, and whence modern reformers have removed it. In its general appearance it so resembles a Scabious as to be taken for one by unskilful botanists.

It is common on dry sandy grounds, heaths and hilly pastures, flowering from June to August. The whole plant is milky, and is sometimes eaten by sheep. Linneus says; that bees are particularly fond of the flowers.

Ray calls it Rampions with Scabious-like heads, and Withering, Scabious Sheep's-bit.

It varies much in size, and on the sea coast of Cornwall it is only about an inch high when full grown, and the whole plant is very hairy.

β. The younger Linneus, in his Supplement, mentions a variety with perennial roots, the stem higher than in the common sort, the heads of flowers larger. It varies with very smooth and very hairy leaves from the same root, some entire, and others serrate. Its native place is unknown; but the seeds were communicated by Monf. Thouin. Villars affirms that the common *Jasione* is perennial.

JASIONE. See *Astrantia*.

^a Curtis & Woodw. Mss.

^b Gartner.

Jasmini flore. See *Volkameria*.]

JASMINOIDES. See *Cestrum* & *Lycium*.

JASMINUM. (*Ιασμινον* of *Dioscorides*; from its violet and warm odor: on account of the fine odour of the flowers.)

Lin. gen. n. 17. *Reich.* 17. *Schreb.* 22. *Tournef.* 368. *Juss.* 106. *Gertn. t.* 42.

Class. 2. 1. Diandria Monogynia.

Nat. order of *Sepiariae*.—*Jasmineæ*, *Juss.*

GENERIC CHARACTER.

CAL. Perianth one-leaved, tubulated, oblong: mouth five-toothed, upright, permanent.

COR. one-petalled, salver-shaped. Tube cylindric, long; border five-parted, flat.

STAM. Filaments two, short: Anthers small, within the tube of the corolla.

PIST. Germ roundish: Style filiform, length of the stamens. Stigma bifid.

PER. Berry oval, smooth, two-celled or two-capsuled.

SEEDS two, large, ovate-oblong, arillated, convex on one side, flat on the other.

OBS. The shape of the flower varies as to acuteness or obtuseness. The berry is in some simple, in others dicocous.

ESSENTIAL CHARACTER.

Cor. salver-shaped. Berry dicocous. Seeds solitary, arillated.

SPECIES.

1. [*Jasminum Sambac*. *Arabian Jasmine*.
Ait. hort. kew. 1. 8.]

Nyctanthes Sambac. *Lin. spec.* 8. *Reich.* 1. 15. *hort. ups.* 4. *cliff.* 5. *fl. zeyl. n.* 12. *Lour. cochinch.* 21. *Gertn. fruct.* 2. 109?

[*Jasminum limonii folio conjugato*. *Burm. zeyl.* 128. *t.* 58. *f.* 2. *Hort. angl. t.* 7.]

J. f. Sambac arabum, folio acuminato: *Till. pis.* 87. *t.* 31.

J. arabicum. *Clus. cur.* 3. *t.* 3.

Syringa arabica, foliis mali aurantii. *Baub. pin.* 398.

Flos manoræ. *Rumph. amb.* 5. 52. *t.* 30.

α. Flore simplici. *Single-flowered Arabian Jasmine*.

β. Floribus multiplicatis, laciniis oblongis acutis tubo brevioribus. *Common double Arabian Jasmine*.

γ. Flor. plenis, lacin. subrotundis tubo longioribus.

Kudda-mulla. *Rheed. mal.* 6. 89. *t.* 51.

Great-flowered double Arabian, or Tuscan Jasmine.

Leaves opposite, simple, elliptic, ovate and subcordate, membranaceous, opaque, branchlets and petioles pubescent, calycine segments awl-shaped.

2. *Jasminum glaucum*. *Glaucous-leaved Jasmine*.

Ait. hort. kew. 9. *Thunb. cap.* 2.

Nyctanthes glauca. *Lin. syst.* 56. *suppl.* 82.

Jasminum africanum, fol. solitariis, flor. vulgationi similibus. *Comm. rar.* 5. *t.* 5.

Leaves opposite, simple, lanceolate, shining, calycine segments awl-shaped.

3. *Jasminum capense*.

Thunb. prodr. cap. 2.

Leaves opposite, ternate, ovate, acuminate, stem erect, angular.]

4. *Jasminum azoricum*. *Azorian Jasmine*.

Lin. spec. 9. *Reich.* 1. 16. *hort. cliff.* 5. *fl. zeyl.*

n. 13. *Comm. hort.* 1. 159. *t.* 82. *Burm. zeyl.* 127. *t.* 58. *f.* 1.

Leaves opposite, ternate, leaflets ovate and subcordate, waved, branchlets smooth, round, segments of the corolla equal to the tube.

[5. *Jasminum angulare*.

Vahl. symb. 3. 1.

Leaves opposite, ternate, leaflets ovate, obtuse; branchlets angular, both they and the petioles villose, peduncles axillary, three-flowered.

6. *Jasminum auriculatum*.

Vahl. symb. 3. 1.

Leaves opposite, ternate, on the flowering branchlets simple; calyxes angular, branches round and pubescent.

7. *Jasminum flexile*.

Vahl. symb. 3. 1.

Smooth, leaves opposite, ternate, racemes axillary, brachiate, stem climbing, branches round.

8. *Jasminum didymum*.
Forst. prodr. austral. n. 8. Vahl. symb. 3. 2.
Smooth, leaves opposite, ternate, leaflets ovate-lanceolate,
racemes axillary.
9. *Jasminum simplicifolium*.
Forst. prodr. austral. n. 7.
Leaves opposite, ovate-lanceolate, simple.]
10. *Jasminum fruticans*. Common Yellow Jasmine.
Lin. spec. 9. Reich. 1. 17. hort. cliff. 5. upf. 5.
Hort. angl. t. 6. Gært. fruct. 1. 196.
J. luteum, vulgo dictum bacciferum. Baub. pin. 398.
Raii hist. 1600.
Trifolium fruticans. Dod. pempt. 571. Ger. 1129.
emac. 1310. Park. parad. 406. 3.
Polemonium monspeliense. Bess. syst. vern. frut.
t. 11. f. 4.
Leaves alternate, ternate, leaflets obovate and wedge-
shaped, obtuse, branches angular, calycine segments awl-
shaped.
11. *Jasminum humile*. Italian Yellow Jasmine.
Lin. spec. 9. Reich. 1. 17. hort. upf. 5. cliff. 6.
J. humile luteum. Baub. pin. 397.
J. luteum. Bess. syst. æstiv. t. 40. f. 2. Ger. 746.
f. 3. emac. 893. f. 3. Raii hist. 1599. 2.
Leaves alternate, acute, ternate and pinnate, branches
angular, calycine segments very short.
12. *Jasminum odoratissimum*. Yellow Indian Jasmine.
Lin. spec. 10. Reich. 1. 17. hort. upf. 5. cliff. 5.
J. indicum flavum odoratissimum. Ferrar. cult. 93.
Raii hist. 1600. Park. theat. 1465. 4.
J. flavum odoratum. Barr. ic. 62.
Leaves alternate, bluntish, ternate and pinnate, branches
round, calycine segments very short.
13. *Jasminum officinale*. Common White Jasmine.
Lin. spec. 9. Reich. 1. 16. hort. cliff. 5. upf. 5.
mat. med. 37. Hall. herb. n. 529. Du Roi barbk.
1. 314. Blackw. t. 13. Curt. magaz. t. 31.
Plenck. ic. t. 9. Lour. cochinch. 20.
J. vulgatus. Lob. ic. 2. 105.—flore albo. Baub. pin.
397. Dukam. arb. 1. 309. t. 122.
J. fl. albo candido odorato. Bess. syst. æstiv. 2. 11.
t. 2.
J. album. Tabern. 886. Ger. herb. 745. f. 1. emac.
892. 1. Park. parad. 406. Raii hist. 1599.
Gelsemium vel Jasminum album vulgare. Park.
theat. 1464.
Leaves opposite, pinnate, leaflets acuminate, buds almost
upright.
14. *Jasminum grandiflorum*. Spanish or Catalonian Jas-
mine.
Lin. spec. 9. Reich. 1. 16.
J. hispanicum, magno flore externe rubente. Baub.
hist. 2. 101. f. 102. Merian. surin. t. 46.
J. humilius magno flore. Baub. pin. 397. Raii hist.
1600.
J. catalanicum. Park. parad. 406. 2. theat. 1464. 2.
J. candiflorum majus. Ger. 745. 2. emac. 892. 2.
Gelsemium catalanicum. Camer. epit. 37.
Pitsjegam Mulla. Rheed. mal. 6. 91. t. 52.
Leaves opposite, pinnate, leaflets bluntish, buds horizontal.
15. *Jasminum nervosum*.
Lour. cochinch. 20.
Leaves ovate, three-nerved.
16. *Jasminum trinerve*.
Vahl. symb. 3. 2.
Leaves opposite, simple, ovate, attenuated, three-nerved,
peduncles axillary, one-flowered.
17. *Jasminum scandens*.
Vahl. symb. 3. 2.
Nyctanthes scandens. Retz. obs. 5. p. 9. n. 3.
Leaves opposite, simple, ovate-oblong, attenuated, panicles
brachiate, calycine segments bristle-shaped, reflex.]

DESCRIPTIONS, &c.

1. Arabian Jasmine rises with a winding stalk to the height of fifteen or twenty feet, sending out many small branches. Leaves smooth, near three inches long, and almost two broad, of a light green, on short foot-stalks, and ending in acute points. The flowers are produced at the end of the branches, and also upon the side shoots, on short peduncles, each generally sustaining three flowers, the two lower opposite, and the middle one longer. Calyxes cylindrical, short,

cut almost to the bottom into eight narrow segments. Tube of the corolla narrow, about half an inch long, cut at the top into eight obtuse segments, which spread out quite flat: these flowers are of a pure white, and have a most agreeable odour, somewhat like Orange flowers, but sweeter; when fully blown they drop out of their cups upon being shaken, and frequently fall out in the night, changing soon to a purplish colour. The plants continue flowering great part of the year, when they are kept in a proper temperature of warmth.

[Reichard, from Fabricius, observes, that the calyx is frequently ten or twelve-cleft. Loureiro, that both that and the corolla, though often eight-cleft, yet vary with from six to ten segments. He describes the stem as shrubby, four feet high, almost upright, knotty, rugged and branched: the lower leaves cordate, obtuse; the upper ovate, and sharpish; all of them quite entire, wrinkled and smooth: flowers four or thereabouts together, always luxuriant and barren.

This beautiful plant, so much esteemed for its highly odoriferous flowers, is a native of the East Indies, and is much cultivated there, in China, and the West Indies. There are several varieties of it in those countries. We have it both with single and double flowers, and also with large double flowers. The last, Mr. Miller says] grows naturally at Malabar, and having a most agreeable odour, the women there string the flowers to hang round their necks, by way of ornament. It grew in the royal garden at Hampton Court, at the end of the last century, but being lost there, was known in Europe only in the garden of the Grand Duke of Tuscany, who would not suffer any cuttings or layers to be taken from his plants; till Mr. Miller received a plant of it from the Malabar coast, by Captain Quick.

This sort was cultivated here in 1730^a.

Gärtner affirms, that there are two different plants, one a genuine species of Jasmine, with spherical berries, of a yellow bay colour, a little larger than Juniper berries, and containing a single seed, manifestly berried; the other approaching in the whole of its structure to *Nyctanthes*, and a genuine species of that genus. This he describes under the names of *Nyctanthes Sambac*, but without determining whether it be that species or not.

2. Glauous-leaved Jasmine is a shrub, with round, even, opposite branches. Leaves petioled, smooth and even. Peduncles terminating, three-cleft or three-flowered. Flowers larger than those of common Jasmine. Native of the Cape of Good Hope, where it was found by Thunberg^b; and also by Masson. It was introduced here in 1774, and flowers in august^c.

3. Found also at the Cape by Thunberg^d.]

4. Azorian Jasmine has longer slender branches, which require support, and may be trained twenty feet high. Leaves of a lucid green, and continuing all the year. Flowers terminating, in loose bunches. Tubes long and narrow, with spreading segments. The corolla is of a clear white, and has a very agreeable scent. Native of the Azores; [of Madeira, according to the Kew Catalogue. Cultivated in 1731, in the royal garden at Hampton Court. It flowers from may to november^e.

5. Branches opposite, round, with an ash-coloured bark; branchlets four-cornered, with lines running down from the base of the petioles, somewhat rough-haired. Petioles channelled, hairy on the edge. Leaflets, veinless, three-nerved, smooth, the end one larger, all petioled. Peduncles villose, shorter than the leaf. Flowers pedicelled. Calyx bell-shaped, with six or seven small blunt teeth. Tube of the corolla almost an inch and half long; segments six or seven, lanceolate, sharp, three times shorter than the tube. Allied to the preceding, but differing in its angular villose branches. Native of the Cape of Good Hope.

6. Branches round, as are also the upper leaves petioles, peduncles and calyxes cinereous-pubescent. Leaves on jointed petioles: on the branches ternate

^a Hort. kew.^b Linn. suppl.^c Hort. kew.^d Thunb. prodr. cap.^e Hort. kew. & Mill. dict. ed. 1. n. 9.

the leaflets petioled, quite entire, smoothish except the midrib on both sides, flat, nerved and slightly veined, the middle one two inches long, ovate, the lateral ones scarcely half an inch, oblong, on shorter petioles; on the flowering branchlets an inch long, oblong, pubescent. Panicle terminating, two inches long: peduncles trichotomous, fastigate; sometimes solitary, opposite from the last axils, twice trifid. Bracte linear at the base of the peduncles, patulous at the tip. Calyxes five-cleft, obovate, abbreviated, plaited in five corners; segments blunt. Corolla an inch long, smooth, border only half the length of the tube; segments six, linear, blunt. Cultivated in Malabar, in the gardens of the idolaters. *Koenig*.

7. Branches round, smooth, as is the whole plant. Leaves on flexuose, perhaps cirrhose petioles: leaflets petioled, ovate-oblong, acuminate, obscurely and simply veined, shining on both sides, quite entire, paler underneath, the middle one two inches long, the side ones about half the size. Racemes opposite, spreading very much, three times as long as the leaf. Partial peduncles opposite, spreading very much, one-flowered or three-flowered. Flowers pedicelled. Bracte linear on each side at the base of the peduncles and pedicels. Calyx bell-shaped, with five or six ovate, acute, minute teeth. Corolla an inch and half long; segments about seven, almost the length of the tube. Native of the East Indies.

8. This is a shrub, and seems to be climbing. Branches round, smooth. Leaflets petioled, two inches long, the side ones smaller, very smooth, obscurely veined, attenuated. Petioles bent, channelled above, half an inch long. Peduncles solitary, opposite, smooth, the length of the general petiole, angular. Pedicels opposite, short, undivided. Calyx bell-shaped, obscurely five-toothed, smooth, with minute toothlets^f. Native of the Society Isles in the South Seas.

9. Native of the Friendly isles, in the South Seas^g.]

10. Common Yellow Jasmine has weak angular branches which require support, and will rise to the height of eight or ten feet, if planted against a wall or pale.

[The calyx is deeply five-cleft^h. Berry superior, oblong-sphæroidal, very smooth, dark purple: skin very thin, diaphanous, pale, when ripe separating spontaneously from the flesh, which is succulent, coloured, and adheres so closely to the seeds, as to appertain rather to them than to the pericarp. Seeds regularly two, but one only usually arriving at maturity, elliptic, flattened like a lens, fastened to the bottom of the berryⁱ. Native of the South of Europe and the Levant. Cultivated in 1597 by Gerarde^k.

Besides the common name of Yellow Jasmine, Parkinson has those of Shrubby Trefoil and Make-bate, which are now obsolete.]

11. Italian Yellow Jasmine is so called because the plants were annually brought from Italy by those who came over with Orange trees. The flowers are generally larger than those of the preceding, but have very little scent, and are seldom produced so early in the season. [Simple leaves are frequently intermixt with the ternate. The calyx is scarcely five-cleft^l.

Its native country is not known. It was cultivated here in 1730, and flowers from July to September^m.]

12. Yellow Indian Jasmine rises with an upright woody stalk eight or ten feet high, covered with a brown bark, sending out several branches, which want no support. Leaflets of a lucid green, ovate and entire, continuing green all the year, the two side ones much less than the end one. The flowers are produced at the ends of the shoots in bunches; the corolla has a longer slender tube, and the segments are blunt and spreading; the whole is of a bright yellow colour, and has a most grateful odour. The flowers come out from July to October and November; and are frequently succeeded by oblong oval berries, which

turn black when ripe, and have each two seeds. [Native of the island of Madeira. Cultivated in 1730ⁿ.

13. Stem shrubby, weak, climbing, round, smooth, branching. Leaflets usually seven, broad lanceolate, quite entire, smooth, dark green, the end one larger and more pointed than the rest. Peduncles few-flowered. Calycine segments capillary. Corolla white, odorous; tube long, cylindrical; border flat, short, rounded. Anthers subsessile in the middle of the tube. Stigma above the tube, long, flattish, emarginate. Berry superior, diccous. The border of the corolla is sometimes only four-cleft^o.

We are not certain as to the native country of our common white Jasmine. Linneus says India and Switzerland; but to the latter it is confessedly exotic, although it be now accustomed to the climate, and grows spontaneously on the rocks, particularly about Chiavenna^p. Probably it is wild in the East Indies.] Mr. Miller affirms, that it grows naturally in Malabar and several parts of India, yet has been long enured to our climate, so as to thrive and flower extremely well; but it never produces any fruit in England. Loureiro says, that it is wild about Canton in China. According to Parkinson, it was thought to have been first brought to Spain out of Syria or thereabouts, and from Spain to us.—Gerarde cultivated this shrub, no less esteemed for elegance than fragrance, in 1597^q. He says it was then common in most parts of England, being used for arbors, and to cover banquetting houses in gardens; and that master Lyte would have it to grow wild among us, which however it did not, as far as he could understand.

The name of Jasmine, has been corrupted into Jessamine, Gelsamine, Gessamine, Jessima, Jessamy, and Gesse.—In German it is Jasmin, Jesmin, Schasmin, Schelsamine, Violleben. In Dutch, Jasmyn. In Swedish, Danish and French, Jasmin. In Italian, Gelsominó. In Spanish, Jazmin. In Portuguese, Jasmim, Gesmim, Jasmineiro. In Arabic, Jasmin, Kajan.]

14. Spanish or Catalonian Jasmine has much stronger branches than the Common White sort, of which Linneus once supposed this to be only a variety. The leaflets are placed closer, and are of a lighter green, the side ones are obtuse, but the odd one ends in an acute point. The flowers are axillary, on peduncles two inches long, each sustaining three or four flowers, of a blush red on their outside, but white within: the tube of the corolla is longer, the segments are obtuse, twisted at the mouth of the tube, and of a much thicker texture.

[Linneus remarks, that it resembles the common sort very much; but he gives the following distinctions: that the stem is straight not scandent, the leaflets nearer to the stem more ovate, not smaller, the three outer ones confluent by the widened petiole, so that they cannot fall separate.

It is a native of the East Indies; and Mr. Miller adds, of the island of Tobago, where the woods are full of it, and whence Mr. Robert Millar sent him a great quantity. It appears from Parkinson that it was cultivated here in 1629, when he says it was scarce made well acquainted with our English air. It came to us from Spain, and thence acquired the name of Spanish or Catalonian Jasmine.

15. Stem shrubby, long, climbing, round, even, branched. Leaves unequally pinnate: leaflets an inch and half long, acuminate, quite entire, shining. Flowers pure white, but without smell, terminating, on many-flowered peduncles. Segments of the corolla oblong, blunt, usually seven, but frequently five, six, or eight. Calycine segments as many, awl-shaped, erect. Berries two, ovate, with one arilled seed. It is allied to *Nyctanthes glauca*, (n. 2.) but has a habit approaching more to Jasmine.—Native of Cochinchina, in hedges^r.

16. Branches obscurely quadrangular, very smooth. Leaves two inches long, drawn into a very long point, extremely smooth, nerves vanishing above, almost

^f Vahl. ^g Forster. ^h Medicus. ⁱ Gärtner.

^k Hort. kew. ^l Willich & Medicus.

^m Hort. kew.

ⁿ Hort. kew.

^o Loureiro, Haller.

^p Haller.

^q Hort. kew.

^r Loureiro.

veinless and paler underneath. Petioles scarcely a quarter of an inch in length. Peduncles solitary, opposite, a little longer than the petiole, smooth, with two opposite, awl-shaped bractes in the middle. Calyx smooth, segments awl-shaped, shorter by half than the tube of the corolla. Corolla an inch long, smooth, with lanceolate segments.—Native of Java.

17. Shrubby, smooth. Branches round, climbing. Branchlets from each axil, solitary, opposite, quite simple, floriferous at top, the length of the leaves, spreading very much. Leaves petioled, extremely spreading, quite entire, flat, even, with the veins quite simple, two inches long and more. The leaves on the branchlets half an inch long, cordate-ovate. Panicle short. Peduncles short. Pedicels very short. Bractes opposite at the base of the peduncles and calyx, linear, the length of the peduncles. Border of the calyx flat; segments six or seven, reflex, villose. Border of the corolla six or seven-cleft; clefts lanceolate, the length of the tube, which widens gradually.

Native of Bengal, climbing to the tops of trees, according to Koenig, who communicated it.]

PROPAGATION AND CULTURE.

1. The plants of Arabian Jasmine are frequently imported from Italy by the Italian gardeners, who bring Orange trees for sale; but these are always grafted upon stocks of the common Jasmine, and not keeping pace in their growth with the stock, become very unsightly; besides the stocks are very apt to shoot from the bottom, and if these shoots be not constantly rubbed off, they will starve the graft. The best method therefore to obtain plants is by layers or cuttings. The former is the surest method, for unless the cuttings be very carefully managed, they will not take root; and the stems being pliable may easily be brought down, and laid in pots filled with a soft loamy soil, plunged into a hot-bed of tan: if the branches be laid down in the spring, and carefully watered, they will put out roots by autumn, when they should be cut from the old plants, and each transplanted into a separate small pot, and then plunged into the tan-bed, where they should be shaded from the sun till they have taken new root.

Cuttings may be planted from may to august, in pots filled with the same earth, and plunged into a moderate hot-bed of tanner's bark. The pots should be pretty large, to contain ten or twelve cuttings; they should be closely covered with bell or hand-glasses to exclude the air, shaded from the sun in the heat of the day, and gently refreshed with water when the earth is dry: they will have taken root by august, when they may be transplanted into separate pots, and treated in the same way as the layers.

This plant may be preserved in a moderate degree of warmth, but will thrive much better in the bark-stove, and produce a greater quantity of flowers; as the leaves continue all the year, it will make a fine appearance in the stove at all seasons; and it will produce flowers great part of the year.

4. Azorian Jasmine is pretty hardy, and requires only to be sheltered from severe frost. It is a greenhouse plant, but will live against a warm wall, if dung be laid to the roots, and a mat hung loosely over it in frosty weather. It is propagated in the same manner with n. 12. and requires the same management. It deserves a place in every greenhouse, for the leaves, being of a shining green, make a good appearance all the year; and the flowers, having a fine scent, and continuing long in succession, render it very valuable.

10. Common Yellow Jasmine was formerly more cultivated than now; for the flowers having no scent, few persons regard them. It often produces so many suckers as to become troublesome; and as it cannot be kept in order for standards, it is seldom introduced into gardens at present. It is easily propagated by suckers or layers.

11. Italian or dwarf Yellow Jasmine was brought over by the Italian gardeners with Orange trees. These

were grafted upon the common Yellow Jasmine stocks. This is somewhat more tender than the preceding, but it will endure the cold of our ordinary winters, in a warm situation.

It may be propagated by laying down the tender branches; or by budding or inarching it upon the common Yellow sort: the latter mode is preferable, as making hardier plants. It should be planted against a warm wall, and in very severe winters will require to be sheltered with mats. It must be dressed and pruned as the White Jasmine, n. 13.

12. Yellow Indian Jasmine is propagated either by seeds, or laying down the tender branches; if by seeds, which it sometimes produces in England, make a moderate hot-bed in the spring, into which plunge some small pots, filled with fresh light earth; and in a day or two after, when you find the earth in the pots warm; put your seeds therein; about four in each pot will be sufficient, covering them about an inch thick with the same light earth, and observe to refresh the pots with water as often as you shall perceive the earth dry; but do not give them too much at each time, which would be apt to rot the seeds.

In about six or eight weeks after sowing, the plants will appear above ground, at which time it will be necessary to remove the pots into another fresh hot-bed, of a moderate temperature, in order to bring the plants forward; water them as often as is necessary, and in the great heat of the day the glasses should be tilted pretty high, and shaded with mats, to prevent the plants from being scorched with heat. About the middle of may begin to harden them to the open air, by taking off the glasses when the weather is warm; but this must be done cautiously, for you should not expose them to the open sun in a very hot day at first, which would greatly injure them; but rather take off the glasses in warm cloudy weather at first, or in gentle showers of rain, and so by degrees inure them to bear the sun; and in june take the pots out of the hot-bed, and carry them to some well sheltered situation, where they may remain until the beginning of october; at which time they must be carried into the greenhouse, observing to place them where they may enjoy as much free air as possible when the windows are opened, as also to be clear from the branches of other plants.

During the winter season they will require to be often watered, but be careful not to give them too much at each time; and in march remove these plants each into a separate pot, being careful not to take the earth from their roots; and if at this time you plunge them into a fresh moderate hot-bed, it will greatly facilitate their rooting again, and be of great service to the plants; but when they are rooted, you must give them a great deal of air; for if you draw them too much, they will become weak in their stems, and incapable to support their heads, which is a great defect in these trees.

You must also harden them to the open air, into which they should be removed about the middle of may, observing, as was before directed, to place them in a situation that is defended from strong winds, which are injurious to these plants, especially while they are young. In winter house them as before, and continue the same care, with which they will thrive very fast, and produce annually great quantities of flowers.

These plants are pretty hardy, and will require no other care in winter, than only to defend them from hard frosts; nor do I know whether they would not live in the open air, if planted against a warm wall, since they are much hardier than the Spanish; but there is this difference between them, viz. these plants have large, thick, evergreen leaves, so that if they were covered with mats, as is directed for the Spanish Jasmine, the leaves would rot and decay the shoots; but as these will only require to be covered in extreme frost, if their roots are well mulched, and a mat or two loosely hung over them in ordinary frosts, it will be sufficient; and these mats being either rolled up, or taken quite off in the day, there will be no great danger of their being hurt, which only can proceed from being too long close covered.

In the spring these should be pruned, when you should

should cut off all decayed branches; but you must not shorten any of the other branches, as is directed for the Spanish fort, for the flowers of this kind are produced only at the extremity of the branches, which, if shortened, they would be cut off; and these growing of a more ligneous substance than the other, will not produce shoots strong enough to flower the same year. If you would propagate this plant from layers, the shoots would be laid down in march; and if you give them a little cut at the joint, as is practised in laying Carnations, it will promote their rooting: observe to refresh often with water, when the weather is dry; which, if carefully attended to, the plants will be rooted by the succeeding spring, fit to be transplanted, when they must be planted in pots filled with light earth, and managed as was before directed for the seedling plants.

This sort is frequently propagated, by inarching the young shoots into stocks of the common yellow Jasmine, but the plants so raised do not grow so strong as those which are upon their own stock; besides, the common yellow Jasmine is very apt to send out a great number of suckers from the root, which renders the plants unsightly; and if these suckers are not constantly taken off as they are produced, they will rob the plants of their nourishment.

13. Common white Jasmine is easily propagated by laying down the branches, which will take root in one year, and may then be cut from the old plant, and planted where they are designed to remain: it may also be propagated by cuttings, which should be planted early in the autumn, and if the winter should prove severe, the surface of the ground between them should be covered with tan, sea-coal ashes, or saw-dust, which will prevent the frost from penetrating deep into the ground, and thereby preserve the cuttings; or where these are wanting, some Peas-haulm, or other light covering should be laid over the cuttings in hard frost; but these must be removed when the weather is mild, for they will keep off the air and occasion damps, which often destroy them.

When these plants are removed, they should be planted where they are designed to be continued, which should be either against some wall, pale, or other fence, where the flexible branches may be supported; for although it is sometimes planted as a standard, and formed into a head, yet it will be very difficult to keep it in any handsome order; or if you do, you must cut off all the flowering branches; for the flowers are always produced at the extremity of the same year's shoots, which, if shortened before the flowers are blown, will entirely deprive the trees of flowers. These plants should be permitted to grow rude in the summer, for the reason before given; nor should you prune and nail them until the middle or latter end of march, when the frosty weather is past; for if it should prove sharp frosty weather after their rude branches are pruned off, and the strong ones are exposed thereto, they are very often destroyed; and this plant being very backward in shooting, there will be no danger of hurting by late pruning.

There are two varieties of this with variegated leaves, one with white, and the other with yellow stripes, but the latter is the most common: these are propagated by budding them on the plain Jasmine, and it often happens, that the buds do not take, but yet they have communicated their gilded miasma to the plants; so that in a short time after, many of the branches both above and below the places where the buds have been inserted have been thoroughly tinctured; and the following year I have often found very distant branches, which had no other communication with those which were budded than by the root, have been as compleatly tinged as any of the nearer branches, so that the juices must have descended into the root.

The two striped sorts should be planted in a warm situation, especially the white striped; for they are much more tender than the plain, and are very subject to be destroyed by great frosts, if they are exposed thereto; therefore the white striped should be planted to a south or south-west aspect, and in very severe winters the

branches should be covered with mats or straw, to prevent their being killed: the yellow striped is not so tender, so may be planted against walls to east or west aspects; but these plants with variegated leaves, are not so much in esteem as formerly.

14. This plant is propagated by budding or inarching it upon the common white Jasmine, on which it takes very well, and is rendered hardier than those which are upon their own stocks. But the plants of this kind being brought over from Italy every spring in so great plenty, they are seldom raised here: I shall therefore proceed to the management of such plants as are usually brought into England from the place above-mentioned, which are generally tied up in small bunches, containing four plants, and their roots wrapped about with moss, to preserve them from drying; which, if it happen that the ship has a long passage, will often occasion them to push out strong shoots from their roots, which must always be taken off before they are planted, otherwise they will exhaust the whole nourishment of the plant, and destroy the graft.

In the making choice of these plants, you should carefully observe if their grafts are alive, and in good health: for if they are brown and shrunk, they will not push out, so that there will be only the stock left, which is of the common sort.

When you receive these plants, you must clear the roots of the moss, and all decayed branches should be taken off; then place their roots into a pot or tub of water, which should be set in the green-house, or some other room, where it may be screened from the cold; in this situation they may continue two days, after which you must prune off all the dry roots, and cut down the branches within four inches of the place where they were grafted, and plant them into pots filled with fresh light earth; then plunge the pots into a moderate hot-bed of tanners bark, observing to water and shade them, as the heat of the season may require. In about a month or six weeks after they will begin to shoot, when you must carefully rub off all such as are produced from the stock below the graft; and you must now let them have a great share of air, by raising the glasses in the heat of the day; and as the shoots extend, they should be topped, to strengthen them, and by degrees should be hardened to endure the open air, into which they should be removed the beginning of june, but must have a warm situation the first summer; for if they are too much exposed to the winds, they will make but indifferent progress, being rendered somewhat tender by the hot-bed. If the summer proves warm, and the trees have succeeded well, they will produce some flowers in the autumn following, though they will be few in number, and not near so strong as they will be the succeeding years, when the trees are stronger and have better roots.

These plants are commonly preserved in green-houses, with Oranges, Myrtles, &c. and during the winter season, will require to be frequently watered; which should be performed sparingly each time, especially in cold weather, for too much wet at that season will be apt to rot the fibres of their roots; they should also have a great share of fresh air when the weather will permit, for which purpose they should be placed in the coolest part of the green-house, among plants that are hardy, where the windows may be opened every day, except in frosty weather; nor should they be crowded too close among other plants, which often occasions the tender part of their shoots to grow mouldy and decay. In april the shoots of these plants should be shortened down to four eyes, and all the weak branches should be cut off; and if you have the conveniency of a glass-stove, or a deep frame, to place the pots in at that season, to draw them out again, it will be of great service in forwarding their flowering; yet still you should be careful not to force them too much; and as soon as they have made shoots three or four inches long, the glasses should be opened in the day time, that the plants may, by degrees, be inured to the open air, into which they should be removed by the latter end of may, or the beginning of june; otherwise

wife their flowers will not be so fair, nor continue so long. If the autumn prove favourable, these plants will continue to produce fresh flowers until november; and sometimes when they are strong they will continue flowering later; but then they must have a great share of air when the weather is mild and will admit of it, otherwise the flower-buds will grow mouldy and decay. But notwithstanding most people preserve these plants in green-houses, yet they will endure the cold of our ordinary winters in the open air, if planted against a warm wall, and covered with mats in frosty weather; they will also produce ten times as many flowers in one season as those kept in pots, and the flowers will likewise be much larger; but they should not be planted abroad till they have acquired strength, so that it will be necessary to keep them in pots three or four years, whereby they may be sheltered from the frost in winter; and when they are planted against the wall, which should be in may, that they may take good root in the ground before the succeeding winter, you must turn them out of the pots, preserving the earth to their roots; and having made holes in the border where they are to be planted, you should place them therein, with their stems close to the wall; then fill up the holes round their roots with good, fresh, rich earth, and give them some water to settle the ground about them, and nail up their shoots to the wall, shortening such of them as are very long, that they may push out new shoots below to furnish the wall, continuing to nail up all the shoots as they are produced. In the middle, or toward the latter end of july, they will begin to flower, and continue to produce new flowers until the frost prevents them; which, when you observe, you should carefully cut off all the tops of such shoots as have buds formed upon them, as also those which have the remains of faded flowers left: for if these are suffered to remain on, they will soon grow mouldy, especially when the trees are covered, and thereby infect many of the tender branches, which will greatly injure the trees.

Toward the middle of november, if the weather proves cold and the nights frosty, you must begin to cover your trees with mats, which should be nailed over them pretty close; but this should be done when the trees are perfectly dry, otherwise the wet being lodged upon the branches, will often cause a mouldiness upon them, and the air being excluded therefrom, will rot them in a short time: it will also be very necessary to take off the mats as soon as the weather will permit, to prevent this mouldiness, and only keep them close covered in frosty weather, and in the nights; at which time you should also lay some mulch upon the surface of the ground about their roots, and fasten some bands of hay about their stems, to guard them from the frost: and in very severe weather, you should add a double or treble covering of mats over the trees; by which method, carefully performed, you may preserve them through the hardest winters. In the spring, as the weather is warmer, you should by degrees take off the covering; but you should be careful not to expose them too soon to the open air, as also to guard them against the morning frosts and dry easterly winds, which often reign in march, to the no small destruction of tender plants if they are exposed thereto; nor should you quite remove your covering until the middle of april, when the season is settled; at which time you should prune the trees, cutting out all decayed and weak branches, shortening the strong ones to about two feet long, which will cause them to shoot strong, and produce many flowers.

There is a variety of this with semi-double flowers, which is at present more rare in England, and only to be found in some curious gardens; though in Italy it is pretty common, from whence it is sometimes brought over amongst the single; the flowers of this kind have only two rows of leaves, so that it is rather cultivated for its curiosity, than for any extraordinary beauty in the flowers. This may be propagated by budding it upon the common white Jasmine, as has been directed for the single, and must be treated in the same manner.

JASMINUM. See *Cestrum*, *Chiococca*, *Citharexylum*,

Ebretia, *Guaiacum*, *Ipomœa*, *Jussieuia*, *Ixora*, *Lantana*, *Nyctanthes*, *Psychotria*, *Volkameria*.]

JASMINUM arabicum. See *Coffea*.

[— capense. See *Gardenia florida*.

[— indicum. See *Plumeria rubra*.]

JATROPHA. (From *ιατρον*, a medicine, or rather poison; and *φαγω*, to eat. Linn.)

Lin. gen. n. 1084. Reich. 1183. Schreb. 1463.

Just. 389. Gartn. t. 108. Manihot. Tournef.

438. Dill. elth. 173. Jussieuia. Houst. reliqu.

15.

Class. 21. 9. Monoecia Monadelphia.

Nat. order of *Tricocca*. *Euphorbia*, Juss.

GENERIC CHARACTER.

* Male Flowers.

CAL. Perianth scarcely manifest.

COR. one petalled, funnel-form. Tube very short. Border five-parted: divisions roundish, spreading, convex, concave beneath.

STAM. Filaments ten, awl-shaped, approximated in the middle; the five alternate ones shorter, upright, shorter than the corolla. Anthers roundish, versatile.

PIST. A weak rudiment, latent in the bottom of the flower.

* Female Flowers in the same umbel with the males.

CAL. none.

COR. five-petalled, rosaceous,

PIST. Germ roundish, three-furrowed. Styles three, bifid. Stigmas simple.

PER. Capsule roundish, tricocous, three-celled, cells bivalve.

SEEDS solitary, roundish.

OBS. *J. urens* has nine upright stamens, of which the three interior are longer than the rest, to which there are as many bristles correspond, each placed on each of those filaments near the base.

Some species in the male flowers have a five-cleft calyx and a five-petalled corolla.

At present ten stamens are ascribed to *J. urens*.

Syst. Veget. 723. R.

ESSENTIAL CHARACTER.

MALE. Cal. none. Cor. one-petalled, funnel-form. Stam. ten, alternately longer and shorter.

FEM. Cal. none. Cor. five-petalled, spreading. Styles three, bifid. Caps. three-celled. Seed one.

SPECIES.

1. *Jatropha gossypifolia*. Cotton-leaved Physic-nut or wild Cassava.

Lin. spec. 1428. Reich. 4. 190. Swartz obs. 366.

Brown. jam. 348. 2. Vahl symb. 1. 78.

J. staphisagrifolia. Mill. dist. n. 9.

Ricinus minor, *staphisagriæ folio*, flore pentapetalo purpureo. Sloan. jam. 1. 129. t. 84.

R. americanus perennis, flor. purp. *staphis. fol.* Comm. hort. 1. 17. t. 9. Merian. surin. t. 38.

R. indicus pilosus trifidus f. *quinquefidus*, flosculis atropurpureis. Pluk. phyt. t. 56. f. 2.

R. amer. fol. staph. Baub. pin. 432. 518.

Ricinoides amer. staph. fol. Tournef. inst. 656.

Leaves five-parted, lobes ovate entire ciliate, bristles glandular branched, on the petioles.

[2. *Jatropha glauca*.* Glauous-leaved Physic-nut.

Vahl symb. 1. 78.

Ricinus maderaspatanus, fl. purpureo, trilobato folio mollibus spinulis dentato. Pluk. phyt. t. 220. f. 4.

Croton lobatum. Forsk. descr. 162.

Calycled, leaves five-cleft and three-cleft serrate-toothed, petioles naked, stipules palmate.

3. *Jatropha spinosa*. Prickly-stalked Physic-nut.

Vahl symb. 1. 79.

Croton spinosum. Forsk. descr. 163.

Calycled, leaves three-parted, lobes angular upwards and quite entire, stem shrubby prickly.

4. *Jatropha variegata*. Variegated Physic-nut.

Vahl symb. 1. 79. t. 21.

Croton variegatum. Forsk. descr. 163.

Calycled, leaves lanceolate quite entire.

5. *Jatropha glandulosa*. Glandular Physic-nut.

Vahl symb. 1. 80.

Croton villosus. Forsk. descr. 163.

Calycled, leaves five-lobed villose, lobes toothblotted glandular, stem shrubby without stipules.

6. *Jatropha moluccana*.

Lin. spec. 1428. *Reich.* 4. 191. *Fl. zeyl.* n. 348.
Burm. ind. 306. *Herm. zeyl.* 34. *Burm. zeyl.*
 170. (*Nux moluccana*).

Leaves ovate quite entire somewhat toothed.

7. *Jatropha divaricata*.

Swartz prodr. 98.

Leaves ovate acuminate entire very smooth, racemes divaricating.

8. *Jatropha Curcas*. *Angular-leaved Physic-nut*.

Lin. spec. 1429. *yst.* 865. *Reich.* 4. 191. *hort. cliff.*
 445. 3. *mat. med.* 208. *Swartz obs.* 367. *Gärtn.*
fruct. 2. 121. *Jacqu. hort.* 3. 36. t. 63. *Burm.*
ind. 306. *Brown. jam.* 348. 1.

R. amer. Ger. 399. 2. *emac.* 496. 2. *Park. theat.*
 182 & 183. f. 4.—major femine nigro. *Baub. pin.*
 432. *Mor. hist. f.* 10. t. 3. f. 15.

R. ficus folio, fl. pentapetalo viridi, fructu lævi pendulo. *Sloan. jam.* 1. 127.

Mundubiguacu. Marcgr. bras. 97.

Leaves cordate angular.

9. *Jatropha multifida*. *French Physic-nut*.

Lin. spec. 1429. *Reich.* 4. 192. *hort. cliff.* 445. 1.
Brown. jam. 348. 3. *Swartz obs.* 368.

Ricinus americanus tenuiter diviso folio. *Breyn.*
cent. 116. t. 53. *Sloan. jam.* 40. *Raii hist.* 167.
Mor. hist. 3. 348. f. 10. t. 3. f. ult.

Avellana purgatrix. Baub. pin. 418.

Manihot fol. tenuiter diviso. Dill. elth. 217. t. 173.
 f. 213.

Leaves many-parted even, stipules bristle-shaped multifid.

10. *Jatropha Manihot*. *Eatable-rooted Physic-nut or Cassava*.

Lin. spec. 1429. *yst.* 865. *Reich.* 4. 192. *Brown.*
jam. 349. 4. *Sloan. jam.* 1. 130. t. 85. (*Ricinus*).

Manihot inodorum f. Yucca fol. cannabini. *Baub.*
pin. 90. *Pluk. phyt.* t. 205. f. 1.

M. Theveti, Yucca & Cassavi. Baub. hist. 2. 794.
Merian. surin. f. 4, 5.

Hiucca f. Mandioca ex qua Cazavi fit. Park. theat.
 1624.

Arbor succo venenato, radice esculenta. Baub. pin.
 512. *Tournef. inst.* 658.

Leaves palmate, lobes lanceolate quite entire even.

11. *Jatropha Janipha*.

Lin. yst. 865. *Reich.* 4. 193. *mant.* 126. *Jacqu.*
amer. 256. t. 162. f. 1. *Lour. cochinch.* 585.

J. carthagenensis. Jacqu. hort. 3. t. 77. *amer. pict.*
 125. t. 244.

Janipha frutescens. Loeff. itin. 309.

Leaves palmate, lobes quite entire, the middle ones on both sides lobed with a sinus.

12. *Jatropha urens*. *Stinging Physic-nut*.

Lin. spec. 1429. *yst.* 865. *Reich.* 4. 193. *hort.*
cliff. 445. 2. *ups.* 290. *Gron. virg.* 154. *Jacqu.*
hort. t. 21.

J. vitifolia. Mill. dict. n. 5.

Ricinus tithymaloides, &c. Comm. hort. 1. 19. t. 10.

R. lactescens, &c. Pluk. phyt. t. 220. f. 3.

Leaves palmate toothed prickly.

13. *Jatropha herbacea*.

Lin. spec. 1430. *Reich.* 4. 193.

Jussieuia herbacea. Houst. reliqu. 6. t. 15. *Amm.*
herb. 256.

Prickly, leaves three-lobed, stem herbaceous.

14. *Jatropha elastica*. *Elastic Gum-tree*.

Lin. yst. 865. *suppl.* 422.

Hevea peruviana. Aubl. guian. 871. t. 335.

Pao Seringa. Aët. par. 1751. t. 20.

Leaves ternate elliptic quite entire, hoary underneath, on long petioles.

DESCRIPTIONS, &c.

1. Stem from two to three feet high, herbaceous, branched, smooth. Branches subdivided, round; beset at the base with branched glandiferous cilia or bristles. Leaves digitate, veined, tender, often three-lobed; lobes acute, ferrate, toothed and ciliate, cilia glandular. Common peduncle terminating; partial cymed, bifid; male flowers very copious, females solitary, in the forks of the peduncles. In the males, calyx five-leaved; leaflets ovate, acute, ciliate. Co-

rolla deeply five-parted, dark purple; segments ovate. At the base of the stamens are five roundish nectareous glands. Filaments ten to twelve, united up to the middle, the length of the corolla: anthers bifid ovate. The females have the calyx and corolla as in the males, but without any nectary. Germ roundish, obtusely three-cornered: style trifid from the base: stigmas dilated, bifid. Capsule ovate, three-cornered, retuse^a.

Native of the West Indian islands; very common in most parts of Jamaica, where the soil is dry and gravelly, and the situation warm. It grows most luxuriantly about houses, where the ground is warmed with dung, and rises in such places, to the height of three feet and a half or more. It is a very beneficial plant in every plantation where they raise any quantity of poultry, which are very fond of the seeds. A decoction of the leaves is sometimes used as a purgative in the dry belly-ach^b. Hence it is called Belly-ach weed. Browne names it Wild Casava or Casadar. It was cultivated by Mr. Miller before 1759.

2. Stem herbaceous, erect, a foot high, pubescent. Leaves wedge-shaped at the base, smooth, glaucous, almost veinless, nerved and villose underneath; segments oblong, acuminate; teeth sharp, unequal, somewhat glandular at the end. Petioles subvillose, longer than the leaves, without glandular hairs. Stipules solitary on each side divided into four or five bristles; bristles unequal, glandular at top, simple, seldom branched. Peduncles towards the top, opposite to the leaves, three inches long, the height of the stem. Corymbs dichotomous: female flowers in the divisions, on short pedicels. Bractes lanceolate-awl-shaped. Calyx permanent, five-leaved: leaflets lanceolate, ciliate. Petals of the female flower the length of the calyx, ovate. Filaments alternately shorter: anthers eight. Germ three-sided: style one: stigmas three. Capsule almost the size of a hazel nut, muricated. Seed the size of a pea, in shape like that of *Ricinus*.

It is distinguished from the preceding at first sight by its glaucous hue: but besides this, it differs in having the leaves produced at the base but not transverse; the lobes oblong, sharply ferrate, not ovate and ciliate-glandular, as in that; and the petioles naked, without branched glandular hairs.—Native of Arabia and the East Indies.

3. Branches round, smooth, with a purple wrinkled bark, glaucous at top. Leaves alternate, very smooth, half an inch long; lobes oblong, very blunt, widened at top, the side ones smaller, narrower, having sometimes a small lobe on the outer side of the base. Petiole a little shorter than the leaf, round. Prickles on each side solitary at the base of the petiole instead of stipules, of the same colour with the bark, awl-shaped, shorter than the petiole. Corymbs dichotomous. The female flower sessile in the divisions. Calyx five-leaved. Corolla five-petalled.

4. This is a shrub with round branches, the bark at bottom brown and chinky, glaucous above. Leaves subpetioled, alternate, blunt, ending in a stiff dagger-point, very smooth, sometimes variegated on the upper surface, two inches long. Stipules in pairs on each side by the side of the petiole, placed on a callus, awl-shaped, stiff, often longer than the petiole, divaricating, permanent, the lower like prickles. Corymbs axillary, shorter than the leaf. Bractes lanceolate, keeled. Calyx five-parted, with oblong segments. Corolla five-petalled: petals oblong. Anthers eight. Capsule smooth, oblong. It varies with broader and narrower leaves. This is different from *Croton variegatum*; that having the flowers in spikes, and no stipules.

5. This is a branching shrub, with a wrinkled, villose bark. Leaves alternate, kidney-form, soft; lobes rounded, unequally toothletted, with brown glands. Petiole the length of the leaf, villose, spreading. There are several glands by the sides of the petiole and in the axils.

These, though they are furnished with a calyx, are distinct from the genus *Croton*, the flowers in that being in spikes^c.

^a Swartz. ^b Browne. ^c Vahl.

6. This is a tree with alternate, ovate or ovate-cordate leaves, with some scarcely conspicuous angles, or one or two teeth, acute like those of the *Hernandia*, but not peltate. Petioles the length of the leaves, with two glands at top where they enter the leaves. Corymb terminating, variously dichotomous. Female flowers on shorter peduncles in the primary divisions, with a roundish germ, and four awl-shaped styles. The males, which are numerous, have a one-leafed, bell-shaped, two-parted calyx, with ovate, concave segments. Petals five, lanceolate, bluntish, patulous, twice as long as the calyx. Filaments numerous, awl-shaped, collected into a head, the length of the calyx, the outer ones shorter: anthers cordate. It has the same appearance with the other species, but differs in the calyx, the number of petals and pistils^d. Now that is better known, it is found that it ought to constitute a distinct genus^e.

Native of the Molucca islands and Ceylon.

7. Native of Jamaica^f.

8. Stem a fathom in height, or according to Browne seldom more than seven or eight feet, suffrutescent, round, smooth and branched. Leaves five-angled, the angles at the base rounded, the rest acute. Flowers in terminating cymes; peduncles alternate, upright, many-flowered; flowers almost aggregate, on very short pedicels. Males copious; females sessile, fewer, solitary in the middle of the cyme. In the males the calyx is five-leaved, with ovate, convex leaflets. Corolla five-parted to the base, pale yellow. Filaments ten to fourteen, connected from the base to the middle: anthers oblong, upright. Glands five, at the base of the filaments. The females have the calyx and corolla as in the male; the latter green and larger. Germ roundish, bluntly three-cornered: style three-parted above the middle, with bifid tips: stigmas blunt^g. Capsule oblong, obtusely-three-cornered, large, when ripe wrinkled and rugged on the outside; the rind thick and coriaceous; the three grains or cells papery, whitish, two-valved: receptacle central, columnar, slender, thickened at top into a flattened fungous head. Seeds solitary, large, ovate-oblong, convex on one side, on the other very obscurely angular, inso-much that they are almost cylindric, produced at the tip into a hollow dagger-point, in which there is a white fungous umbilicus; they are black with minute chinks, and rough to the touch^h.

Native of South America and the islands in the West Indies. Browne says it is very common in all the sugar colonies, and cultivated frequently in inclosures, but dies after a few years. The leaves are much used in resolutive baths and fomentations, and the seeds sometimes as a purgative, but they operate very violently, and are therefore now but little used. Gærtner suggests, that it was first observed by Boyle, that the fruit might be eaten with safety, if the embryo were taken out.

It was cultivated in 1731, by Mr. Millerⁱ.

9. This grows generally to the height of five, six, or seven feet, with a very smooth, suffrutescent stem, and spreading branches. Stipules bristle-shaped, multifid, at the base of the branches and petioles. Leaves alternate, subpeltate, multifid; the divisions pinnate with the odd leaflet longer, smooth but whitish underneath. Peduncles terminating, very long, round, thick, very smooth, subdivided. Pedicels coloured, in corymbs. Flowers small, red. Males very numerous. Females solitary, subsessile.—In the former, calyx five-cleft, coloured. Petals five ovate, entire. Nectary five-parted, surrounding the stamens. Filaments eight, red, united at the base: anthers ovate, yellow. In the latter, calyx five-parted, coloured. Corolla five-petalled: petals ovate, red. Germ three-cornered, green: styles three, shorter, red, bifid at top: stigmas blunt. Capsule, large, oblong, growing yellow as it ripens. Seeds solitary, round^k.]

It is now very common in most of the islands in the West Indies, but was introduced from the continent first into the French islands, whence it is called in the British islands French Physic-nut. [It is much culti-

vated in Jamaica, and forms no small ornament in their flower-gardens, with its large bunches of beautiful red flowers^l. The whole plant distils a tenacious watery liquor^m. The seeds are purgative, but so violent in their operation that they are now rarely administered, though formerly, they were almost the only purgative medicine used among the Spaniardsⁿ.

It was cultivated in 1696, in the royal garden at Hampton Court; and flowers from June to August^o.

10. The *Cassava* shoots from a tough, branched, woody root, whose slender collateral fibres swell into those fleshy conic masses for which the plant is cultivated; and rises by a slender woody knotted stalk, to the height of four, five, or six feet, sometimes more^p.] Leaves alternate, smooth, on long petioles, seven-lobed; lobes narrow at the base, growing broader till within an inch and half of the top, where they diminish to an acute point; the three middle lobes are about six inches long, and two broad where broadest; the two next are about an inch shorter, and the two outside lobes are not more than three inches long; the middle lobes are sinuated on each side near the top, but the two outer are entire. The flowers are produced in umbels at the top of the stalks, some male and others female; petals five, spreading: in the male flowers stamens ten, united; in the females, germ round with three furrows in the centre: styles three, two distant, and one rising between them shorter, all crowned by a single stigma. Capsule roundish.

[Native of South America. Pere Rochon says that it was transported into the Isle of France from Brasil. This plant which formerly supplied the greatest part of the sustenance of the native Indians, is now raised in most parts of America, and generally considered as a very beneficial vegetable, yielding an agreeable wholesome food; and this, with its easy growth and hardy nature, recommends it every where.

It grows to perfection in about eight months, but the roots will remain a considerable time in the ground uninjured. They are generally dug up as occasion requires, and prepared for use in the following manner: being first well washed and scraped, then rubbed to a pulpy farina on iron graters, they are put into strong linen or palmetto bags, and placed in a convenient press, until the juice is entirely expressed: the farina is then taken out and spread in the sun for some time, pounded in large wooden mortars, run through coarse sieves, and afterwards baked on convenient irons. These are placed over proper fires, and when hot bestrewed with the sifted meal to whatever size or thickness people please to have the cakes made: this agglutinates as it heats, grows gradually harder, and when thoroughly baked, is a wholesome well-tasted bread. *Tapioca* is also prepared from this root.

The juice of the root is sweetish, but more or less of a deleterious nature both fresh and in the putrid state, though it hardly retains any thing of this quality whilst it ferments^q. The milky juice swallowed, or the root eaten without preparation, brings on convulsions, and occasions violent retching and purging: it acts only on the nervous system, and produces no inflammation in the stomach; but the stomach of a man or other animal poisoned by it appears to be contracted one half^r.

However violent the rough juice may be found immediately after it is expressed, it is certain that the roots are daily eaten by Hogs without prejudice; and a little mint-water and salt of wormwood will calm the most violent symptoms that arise on taking it, and prevent all bad consequences, even in the human species, if it be but timely administered.

What is expressed from the farina is frequently preserved and prepared for many economic uses: in boiling it throws up a thick viscid scum, which is always thrown away, and the remaining fluid is sometimes diluted and kept for common drink; and is thought to resemble whey very much in that state. Some use it in sauces for fish and many other sorts of food; purposes for which it was employed by the native In-

^d Linn. zeyl. ^e Swartz obs. ^f Swartz prodr. ^g Swartz.
^h Gærtner. ⁱ Hort. kew. ^j Swartz.

^l Browne. ^m Swartz. ⁿ Browne. ^o Hort. kew.
^p Browne. ^q Ibid. ^r Rochon's madag. introd. 23.

dians, long before any European had landed in those parts of the world.

The farina, whilst yet impregnated with the juice, makes an excellent salve, which seldom fails to clean and heal the most desperate sores: where these are very foul, or the parts too much relaxed, it is sometimes mixed with a few pounded tobacco leaves; and has been often found effectual, where common ointments have not had the least force: it is also used by way of poultice, and is an excellent resolute^{*}.

In Madagascar Cassava is the ordinary food of the Blacks, and the French call it Madagascar Bread. In the West Indies this plant is called Cassava, Cassada or Cassadar. In Brasil Mandihoca, Manüba, Manduba: whence we have the name Manihot; and in French Manhiot, Magnoc, Manioc, Manioque; in Portuguese Mandioca; in Dutch Maniok; in German Manihot, Maniok. The Carabes call it Yuka or Juka; which name is adopted in Germany, and by the Spaniards, who call it Yucca de Cassabe. The Germans and Dutch have also adopted the West Indian name, as well as the English.—At Rio di Janeiro they call the flour or meal of the Cassava root, Farinha di Pao; which may, not improperly, be translated, Powder of post[†].

It was cultivated here in 1739, by Mr. Miller, and flowers in july and august[‡].

11. This is an upright shrub, quite smooth all over, abounding in an aqueous juice, that is somewhat clammy, and has the smell of walnut leaves. In close woods it frequently rises with a weak, unbranched, rod-like stem to the height of twenty feet, and it retains this habit in the European stoves: among other shrubs in open places it is commonly no more than six feet high, and approaches very near to the figure of the preceding sort, from which Linneus seems to think this is hardly specifically different. In the ruined walls of the fortress of Boca Chica it is become a sort of tree, eight feet high, with a straight trunk four inches in diameter, and with a pretty head. Loureiro describes it, as only four feet high, with a straight, unbranched, unarmed stem.—Roots very tuberous, like those of Asphodel, in bundles; the tubers ovate-oblong, acute, white within and without, three inches long, with a sweetish hot taste. Leaves large, elegant, palmate-digitate; lobes five, (about nine, according to Loureiro) oblong, acuminate, contracted in the middle on both sides by a very large sinus; the outer ones frequently quite entire; (lanceolate, unequal, quite entire or sometimes sinuated, *L.*) petiole half a foot in length. Racemes loose, bearing a few female flowers below many males. Corolla yellowish and brownish green. Filaments before fecundation quite upright, but after that bent in various directions. The fruit is covered with a fleshy green pellicle, marked with six white streaks, and shining very much: it is then globular and more than half an inch in diameter; but this dries up and falls off, and then the capsule remains three-lobed on the sides. But this is more or less the case in the other species of this genus, *Croton* and *Acalypha*. The seeds are shining, subovate, green or ash-coloured.

Native of South America: common about Carthage, flowering almost the whole year^{*}: also of China, according to Loureiro, who adds, that it is used, not raw but boiled, as a resolute, like the preceding.]

12. This has a thick, swelling, fleshy root, from which arises an herbaceous stalk as big as a man's thumb, four or five feet high, and dividing into several branches; these are very closely armed with long brown spines, the foot-stalks of the leaves are six or seven inches long, which are also armed with spines, but not so closely, nor are the spines so long as those on the stalk and branches: the leaves are deeply cut into five lobes, which are jagged deeply on their sides, and the nerves are armed with stinging spines: the flowers are produced in umbels at the top of the branches, standing upon long naked peduncles; they are of a pure white colour: the male flowers appear

first, they are five-petalled, forming a short tube at bottom, and spreading open flat above; the stamens are the length of the tube, and fill it up at the mouth: the female flowers are smaller, but of the same shape, with an ovate three-cornered germ.

[According to Jacquin, the leaves are half-three-lobed, and cordate at the base. Corolla naked; the male flowers one-petalled, the females five-petalled. Stamens ten.

Native of Brasil.] Mr. Miller says, it was found at Carthage in New Spain by Mr. Robert Millar, who sent the seeds to England, which succeeded in several curious gardens. [But according to the catalogue of the Royal garden at Kew, it had been introduced before by Mr. Bentick in 1690. It flowers from may to july.]

Mr. Miller has another sort, found by Dr. Hous-toun at La Vera Cruz, where it was planted for ornament. Having leaves divided like the common Wolfsbane, he names it *Jatropha aconitifolia*. It rises with a strong, brittle, woody stalk, ten or twelve feet high, covered with a gray bark, and dividing into many branches. The leaves are armed with small stinging spines like those of the Nettle. At the ends of the branches come out the flower-stalks, which are five or six inches long, and sustain an umbel of white flowers. The males are one-petalled, and have a pretty long tube, divided at top into five segments: the females expand in form of a rose, and are succeeded by a globular, prickly, trilocular fruit. [It is probably a variety of the urens.]

13. This is an annual plant rising with an herbaceous stalk about a foot high, dividing into two or three branches. Leaves alternate on long foot-stalks; lobes oblong, slightly sinuated, ending in acute points. The whole plant is closely armed with long, bristly, stinging spines. The flowers grow in an umbel at the ends of the branches; they are small, of a dirty white colour: the females are succeeded by ovate, three-lobed capsules, covered with the same spines as the plant.

[Native of La Vera Cruz.

14. The tree yielding that resin which is now commonly known under the name of Elastic Gum is supposed to be of this genus; but there are several others which yield a similar juice, as *Ficus indica*, *Cecropia peltata*, &c.[†] Schreber placed it in a new genus, *Siphonia*.

It is a native of Guiana, of Quito and Brasil, particularly in Para, where it is called Massaradub. The Indians by an incision in the bark extract a viscid white substance, like that which issues from the fig-tree; they receive it into earthen molds, to make rings, bracelets, girdles, syringes, hats, boots, flambeaux, figures of animals, &c. Abbé Rochon says that the inhabitants of Madagascar also made flambeaux of it, which burn without wicks, and afford them a very good light when they go out to fish in the night time; that surgery has derived some benefit from it, as it serves to make excellent bandages; and that in a state of solution, it is very proper for coating over silk, to render it impervious to air or water. It has the extensibility of leather, with a very considerable elasticity. Spirit of wine makes no impression on this substance, but it dissolves in ether and linseed oil, or in nut oil digested gently in a sand bath: there are also other fat and oily substances which affect it very sensibly. The Chinese have been long acquainted with the art of dissolving it, and of giving it various colours.

Abbé Rochon describes the tree which yields the elastic gum in Madagascar as twenty feet high, the leaves eight inches long and two inches broad, the fruit resembling a round fig and full of small seeds. We may conclude therefore that this tree is the *Ficus indica*; certainly not an *Jatropha*. The coagulated juice however is of the same nature.

The first account which we have of the elastic gum or resin, or Caoutchouc, as it is called by the Indians to the S. E. of Quito, is in a memoir by Mons. de la Condamine in the Memoirs of the French Academy

* Browne.

† Hawksw. voy. 2. 33

‡ Hort. kew.

§ Jacquin.

¶ Linn. suppl.

for 1751, and in his relation of the river of Amazons in 1745. The tree which yields this substance grows along the banks of this river, and is very common in the forests of the province of Emeralds to the north of Quito, where it is called *Hbeve*, and whence Aublet has taken his generic name.

The tree is described as very lofty and straight, and quite naked up to the head, which is very small; the trunk of the largest is only about two feet in diameter. The foliage is not unlike that of the Cassava (n. 10.). The fruit is triangular, inclosing three seeds. These seeds or kernels, peeled and boiled in water, yield a thick oil, which the Indians use as butter with their food. The wood of the tree is light and fit for masts.

Monf. Fresneau likewise, about the year 1746, discovered the same tree at Cayenne. Whatever is made of this substance must be done on the spot, because it thickens and dries very fast. Warm water will soften and render it supple; it is sensible to the least degree of frost, but the heat of the sun does not make any impression upon it.]

PROPAGATION AND CULTURE.

All these plants being natives of the warm parts of America, are too tender to thrive in the open air in England. The first sort is cultivated in the West Indies for food, where it is propagated by cutting the stalks into lengths of seven or eight inches, which, when planted, put out roots.

The other sorts are easily propagated by seeds, which should be sown on a good hot-bed in the spring, and when the plants are fit to remove, they should be each transplanted into a small pot filled with light earth, and then plunged into a fresh hot-bed of tanners bark, carefully shading them till they have taken fresh root; after which they must be treated in the same manner as other tender plants from hot countries, admitting fresh air to them daily, in proportion to the warmth of the season; but as many of the sorts have succulent stalks, some of which have a milky juice, they should have but little water given them, for they are soon destroyed by wet.

The thirteenth sort is an annual plant; if the seeds are sown early in the spring, and the plants are brought forward, they will perfect their seeds the same year; but the other sorts are perennial, so do not flower till the second or third year; therefore the plants should be plunged into the tan-bed in the stove, where they should constantly remain, giving them a large share of air in warm weather; but in winter they must be tenderly treated, and in that season must have very little water. With this management the plants will continue several years, and produce their flowers, and frequently perfect their seeds in England.

[10. The Cassava thrives best in the West Indies, in a free mixed soil, is propagated by the bud or gem, and is generally cultivated in the following manner. The ground is first cleared, and hoed up into shallow holes, of about ten or twelve inches square, and seldom above three or four inches in depth. When they intend to plant, they provide a sufficient number of full-grown stems, and cut them into junks, of about six or seven inches length, as far as they find them tough and woody, and well furnished with prominent, well-grown, hardy buds: of these they lay one or two in every hole, and cover them over with mould from the adjoining bank; but care must be taken to keep the ground clean, until the plants rise to a sufficient height to cover the mould and to prevent the growth of all weaker weeds.²

IBAMETARA. See *Spondias*.]

IBERIS. (*Ἰβρις* of *Dioscorides*. Supposed to be so named from Iberia, its place of natural growth.)

Lin. gen. n. 804. Reich. 868. Schreb. 1080. Gærtn. t. 141. Juss. 240. Dill. gen. 6.

Class. 15. 1. Tetradinamia Siliculosa.

Nat. order of *Siliquosæ* or *Cruciformes*. — *Cruciferae*, Juss.

GENERIC CHARACTER.

CAL. Perianth four-leaved: leaflets obovate, concave, spreading, small, equal, deciduous.

² Browne.

COR. four-petalled, unequal. Petals obovate, obtuse, spreading, claws oblong, upright: of these the two exterior petals are far larger, and equal to each other; the two interior very small, reflex.

STAM. Filaments six, awl-shaped, upright: of which the two lateral ones are shorter. Anthers roundish.

PIST. Germ roundish, compressed. Style simple, short. Stigma obtuse.

PER. Silicle upright, suborbiculate, compressed, emarginate, surrounded by a sharp edge, two-celled: partition lanceolate; valves navicular, compressed, carinated.

SEEDS a few, subovate.

OBS. I. rotundifolia has nearly equal flowers and a subquadrangular silicle. R. The silicle is not emarginate in I. cepeæfolia. Is the partition bipartite in all the species?

ESSENTIAL CHARACTER.

Cor. irregular, with the outer petals larger. Silicle emarginate, many-seeded: (one seed only in each cell in some of the species.)

SPECIES.

1. *Iberis semperflorens*. Broad-leaved evergreen Candy-tuft.

Lin. spec. 904. syst. 589. Reich. 3. 229. hort. cliff. 330. upf. 184.

Leucoium fruticosum umbellatum persicum, fol. sempervirentibus. Mor. hist. 2. 296.

Thlaspi latifolium polycarpon, leucii foliis. Bocc. sic. 55. t. 22. f. a. 1.

T. frut. fol. leucii, semperflorens. Seba thes. 1. t. 13. f. 4.—persicum fol. Keiri. Zanoni. Raii hist. 837.

T. persicum. Rivin. tetr. 224. f. 2.

Frutescent, leaves wedge-shaped quite entire blunt.

2. *Iberis sempervirens*. Narrow-leaved evergreen Candy-tuft.

Lin. spec. 905. syst. 589. Reich. 3. 229. hort. cliff. 330.

Thlaspi montanum sempervirens. Baub. pin. 106. Park. theat. 841. n. 3. 842. f. 3. Raii hist. 833.

Riv. tetr. 224. f. 1.

T. mont. candidum. Dalech. hist. 1180.

T. creticum perenne, flore albo. Barr. ic. 214. & 734.

Frutescent, leaves linear quite entire acute.

[3. *Iberis garexiana*.

Scop. insubr. 1. 16. t. 7. Allion. pedem. n. 920. t. 40. f. 3. & t. 54. f. 2.

Leaves oblong-lanceolate acute, stems fruticulose diffused flexile warted, branchlets leafy upright.

4. *Iberis gibraltarica*. Gibraltar Candy-tuft.

Lin. spec. 905. Reich. 3. 229. Curt. magaz. 124.

Thlaspidium hispanicum, &c. Dill. elth. 382. t. 287. f. 371.

Frutescent, leaves toothed at the tip.

5. *Iberis faxatilis*. Rock Candy-tuft.

Lin. spec. 905. syst. 589. Reich. 3. 229. amoen. 4. 321. Ger. prov. 354. Gouan illustr. 41. Villars dauph. 3. 287. Allion. pedem. n. 921.

Thlaspi faxatile vermiculato folio. Baub. pin. 107. Garid. aix. 466. t. 101. Raii hist. 836.—item fruticosum thymbræ fol. hirsutum, & faxatile polygalæ fol. Baub. pin. 107. (Gouan).

T. montanum verm. acuto fol. Park. 844. n. 13. 843. f. 14.

Lithonthlaspi tertium fruticosius, verm. acuto fol. Col. ecphr. 1. 278. t. 277. f. 1.

Suffrutescent, leaves lanceolate-linear fleshy acute quite entire ciliate.]

6. *Iberis rotundifolia*. Round-leaved Candy-tuft.

Lin. spec. 905. syst. 589. Reich. 3. 230. mant. 425. Scop. carn. n. 805. t. 37. ann. 2. 56. Villars dauph. 3. 288. Krock. files. n. 1036.

Thlaspi minimum, &c. Ard. spec. 2. 33. t. 15. f. 1. T. subrotundo folio, utriculo grinali. Barr. ic. 1305.

Lepidium caule repente, fol. ovatis amplexicaulis. Hall. belv. n. 517.

L. rotundifolium. Allion. pedem. n. 925. t. 55. f. 2. Herbaceous, leaves ovate, stem-leaves embracing even juicy.

7. *Iberis cepeæfolia*.

Lin. syst. 589. Jacq. misc. 2. 28. t. 1.

Thlaspi

- Thlaspi montanum*, &c. *Barr. ic.* 848.—alp. fol. rot. carnofo, purpurafcente flore. *Tourn. inf.* 212. *Herbaceous, leaves ovate, stem-leaves fessile even juicy.*
8. *Iberis umbellata*. *Purple Candy-tuft*.
Lin. spec. 906. *fyst.* 589. *Reich.* 3. 230. *hort. cliff.* 330. *upf.* 184. *Krock. filef. n.* 1037. *Gärtn. fruct.* 2. 279. *Curt. mag.* 106.
- Thlaspidium creticum*. *Riv. tetr.* 111.
- Thlaspi umbellatum*. *Crantz. austr.* 25.—creticum iberidis folio. *Baub. pin.* 106.
- T. cret. fl. rubente & albo*. *Baub. hift. Raii hift.* 834.—umb. fl. purpureo & albo. *Park. parad.* 390.
- T. cappadocicum fl. albo & incarnato*. *Befl. cyst. æst.* 7. t. 11. f. 2, 3.
- T. candiæ*. *Ger.* 207. *emac.* 265.
- Draba f. Arabis, f. Th. Candiæ*. *Dod. pempt.* 713.
- Herbaceous, leaves lanceolate acuminate, the lower serrate, the upper quite entire.*
9. *Iberis amara*. *White Candy-tuft*.
Lin. spec. 906. *Reich.* 3. 230. *hort. upf.* 184. *Gärtn. fruct.* 2. 280. *Huds. angl.* 285. *Wither. arr.* 682. *ed.* 3. 575. *Engl. bot. t.* 50. f. 2. *Sibth. oxon. n.* 567. *Hall. helv. n.* 520. *Scop. carn. n.* 806. *Pollich pal. n.* 614. *Guett. stamp.* 2. 146. *Villars dauph.* 3. 290.
- Thlaspi amarum*. *Crantz. austr.* 25. *Tabern. ic.* 462. *Ger.* 205. 6. *emac.* 263. 5.
- T. umbellatum arvense amarum*. *Baub. hift.* 2. 925. 1. *Raii hift.* 835.—iberidis folio. *Baub. pin.* 106. *Park. theat.* 839. n. 2.
- Thlaspidium fol. iberidis*. *Riv. tetr.* 112.
- Herbaceous, leaves lanceolate acute somewhat toothed, flowers in racemes.*
10. *Iberis linifolia*. *Flax-leaved Candy-tuft*.
Lin. spec. 905. *fyst.* 589. *Reich.* 3. 231. *Gouan illust.* 41. *Ger. prov.* 355. n. 4.
- Thlaspi lusitanicum umbellatum, gramineo folio, fl. purpurafcente*. *Tourn. inf.* 213. *Garid. aix.* 459. t. 105.
- Herbaceous, leaves linear quite entire, stem-leaves serrate, stem panicled, corymbs hemispherical.*
11. *Iberis odorata*. *Sweet-scented Candy-tuft*.
Lin. spec. 906. *Reich.* 3. 231. *hort. cliff.* 330.
- Thlaspi umbellatum creticum, fl. albo odoro, minus*. *Baub. pin.* 106. *Raii hift.* 835.
- T. umb. cret. fl. albo odorato*. *Park. theat.* 839. n. 3.—parvum, umb. fl. niveo odor. *Baub. hift.*—parv. 4. odor. fl. *Clus. hift.* 2. 132.
- Herbaceous, leaves linear, widening at top and serrate.*
- [12. *Iberis arabica*.
Lin. spec. 906. *Reich.* 3. 232. *amoen.* 4. 278.
- Thlaspi humile spica purpurea*. *Buxb. cent.* 1. 2. t. 2. f. 1.
- Herbaceous, leaves ovate smooth veinless quite entire, sili-cles two-lobed at the base and tip.*]
13. *Iberis nudicaulis*. *Naked-stalked Candy-tuft, or Rock-cress*.
Lin. spec. 907. *fyst.* 589. *Reich.* 3. 232. *hort. cliff.* 328. *fl. succ. n.* 581. *Huds. angl.* 285. *Wither. arr.* 682. *ed.* 3. 575. *Curt. lond. n.* 66. *Engl. bot. t.* 327. *Lightf. scot.* 346. *Relb. cant. n.* 476. *Hall. helv. n.* 521. *Pollich pal. n.* 615. *Fl. dan. t.* 323. *Villars dauph.* 3. 291. *Krock. filef. n.* 1038.
- Bursa pastoris minor*. *Dod. pempt.* 103. *Lob. ic.* 1. 221. 2. *Park. theat.* 866. 3.—minima. *Ger.* 214. 5. *emac.* 276. 2.—fol. incis. *Baub. pin.* 108.—parva, fol. glabro spisso. *Baub. hift.* 2. 937. 1.
- Nasturtium petræum*. *Tabern. ic.* 451. *Ger.* 194. 3. *emac.* 251. 4. *Park. theat.* 828. 7. *Raii hift.* 827. *fyn.* 303. *Petiv. brit. t.* 50. f. 2.—fol. *Bursæ Pastoris*. *Baub. pin.* 104.
- N. minimum vernal, fol. tantum circa radicem*. *Magn. monsp.* 187. fig.
- Herbaceous, leaves sinuate, stem naked simple.*
- [14. *Iberis pinnata*. *Winged Candy-tuft*.
Lin. spec. 907. *fyst.* 589. *Reich.* 3. 232. *mant.* 426. *amoen.* 4. 278. *Villars dauph.* 3. 291. *Ger. prov.* 355. n. 5.
- T. umbellatum, nasturtii folio, monspeliacum*. *Baub. pin.* 106. *Raii hift.* 835. *Park. theat.* 840. f. 4.—alterum minus umb, nasturtii hortensis folio, nar-

bonense. *Lob. ic.* 218.—tenuiter diviso fol., amarum. *narb. Baub. hift.* 2. 925.—narbonense. *Ger.* 209. 3.—umb. *narb. Ger. emac.* 267. 4. *Herbaceous, leaves pinnatifid.*

DESCRIPTIONS, &c.

1. This is a low shrubby plant, which seldom rises above a foot and half high, having many slender branches, which spread on every side, and fall towards the ground if they are not supported. These branches are well furnished towards their extremity with leaves, which continue green all the year; and in summer the flowers are produced at the end of the shoots; they are white and grow in an umbel, continue long in beauty, and being succeeded by others, the plants are rarely destitute of them from the end of august to the beginning of june, which renders this plant valuable.

There is a variety with striped leaves.

[It is a native of Persia and Sicily, and was cultivated in the Oxford garden in 1680^a.]

2. This is of humbler growth than the first, seldom rising more than six or eight inches high, nor do the branches grow woody, but are rather herbaceous. The leaves continue green through the year, and the flowers are of as long duration as those of the first sort.

[Native of the island of Candia on rocky ground. Cultivated in the botanic garden at Chelsea in 1739; flowering from april to june^b.]

3. Root horizontal, with many fibres. Stems many, depressed, brown, round, naked, commonly simple, not at all striated. Leaves some oblong others lanceolate, all entire, alternate, sessile, smooth, more or less spreading, many especially about the middle of each branchlet. Flowers in terminating corymbs. Calycine leaflets oblong, almost equal, membranaceous and whitish at the tip. Corolla white; the two outer petals double the size of the others, from a shorter and slender claw spreading out into an oblong entire obtuse border. The four longer filaments are red, and grow thicker above the middle. There are two elliptic green glands between the shorter filaments and the germ, which is elliptic; the style is short, and the stigma is yellowish and papillose. Silicle (or rather capsule) rufescent, flattish on one side, slightly convex on the other, and marked with transverse branched wrinkles. Seed single in each cell, ovate, rufous, slightly compressed, fastened by its proper pedicel to the upper part of the partition.

The seed-leaves are ovate, elliptic, smooth. The seeds germinate in fourteen or sixteen days. It flowers the second year, but all the seeds do not arrive at maturity. It has no smell; but the same taste as *Lepidium*. It agrees with the two preceding sorts in having frutescent stems, smooth leaves, and white flowers; but differs from the *sempervirens* in having the stems not upright, the branches neither rigid nor striated, and the leaves acute; from the *sempreflorens* in the leaves not appearing in winter, and in the stems being flexible, more slender, and warted by the fallen leaves.

The seed-vessel differs no otherwise from a capsule than in having deciduous valves, and it has only a single seed in each of the two cells^c.

Native of Piedmont, about Strop, above Tende in the high mountains between Briga and Carlin, and above Frabrosa^d.

4. Stems many, thick, green, striated, ascending, from a foot to eighteen inches in length, divided into several branches. Leaves alternate, gradually widening from a narrow base, ending in a blunt point, thick, smooth, veinless except in the middle, dark green above; somewhat paler underneath. Flowers terminating in corymbs, at first white, afterwards pale purple, without scent; the two outer petals broader and longer. Anthers oblong, at first yellow but turning brown or dusky purple. Calycine leaflets green with purple edges. Seeds broadish, flattened, brownish.

The stems are rigid and woody; the leaves in the wild plant are smaller and more bluntly toothed than in the cultivated one^e.

^a Hort. kew.^b Ibid.^c Scopoli.^d Allioni.^e Dillenius.

The flowers bear some resemblance to those of the common Candy-tuft, (n. 8.) but when they blow in perfection they are usually twice as large: hence they are highly ornamental in the greenhouse, early in the spring, which is the time of their appearing^f.

It is nearly allied to the first species, but it is less shrubby and woody, the leaves are toothed towards the end, and the flowers are in larger corymbs.

I. rotundifolia (n. 6.) is a smaller and less robust plant, the leaves smaller and rounder, the flowers and filicles also smaller, the latter rounder, not emarginate^g.

Native of Spain. Cultivated in 1732 at Eltham by James Sherard, M. D.^h

5. Root woody, hard, twisted and large. Stems diffused, numerous, branched at the base, scarred with fallen branches and leaves, three or four inches high. Leaves clustered, very narrow, almost cylindrical, succulent, smooth, sessile, diminishing in length as they are higher on the stem, and ciliate on the edge; the lower ones spreading and reflex, the upper approximating to the stem and fewer. The stems and branches are almost naked at top, and terminate in a corymb of white or purple flowers: in the progress of the inflorescence the corymb becomes a raceme. Calycine leaflets ovate, white at the edge, the same length with the claws of the corolla. Petals almost linear, only the end is broader, crenulate but not emarginate, the two upper ones double the length of the two others or more. Filaments purple at top. Silicle large, roundish at the base, retuse at the top, with a wide leafy rim, having in each cell two oblong-ovate seeds, grooved on one sideⁱ.

Native of the South of France and Italy.

Garidel's figure represents the plant larger, and the leaves more fleshy than it is even in gardens. Columna's figure is much better^k.

It varies with leaves almost flat, and little if at all ciliated^l.

6. Stem creeping. Leaves smooth, soft; those next the root quite entire and petioled, those on the stem smooth and entire. Flowers almost regular. Silicle subquadrangular. It resembles *Thlaspi faxatile*^m.

The roots creep far and wide and are much branched. Stems procumbent, a palm in length, leafy but not branched. Leaves succulent, glaucous, thinly ferrate or entire. Corymbs dense. Calycine leaflets lanceolate. Petals scarcely, if at all, unequal, with a broad claw. Silicle long, ovate-lanceolate, and rendered almost square by a raised line. Seed single in each cellⁿ.

Stems naked, slender, creeping, branched. Branches creeping, naked, red at bottom, above leafy and ascending. Lower leaves like those of wild Thyme, smooth, thickish, soft, pale green, quite entire or with a tooth or two at top. Flowers in racemes, on spreading peduncles. Calyx reddish. Petals purple, with the border entire, blunt, oval. Silicle three lines long, somewhat oblique, oblong. Seed smooth, compressed, subovate, blunt, rufous, lanuginous where it adheres to the partition^o.

Native of Switzerland, Carniola, South of France, Italy, Silesia.—Cultivated by Mr. Miller in 1748. It flowers from may to july^p.

This and all the preceding sorts are perennial; the following are annual, except perhaps the next which seems to be perennial.

7. Root long, round, slender, fungous, branched, creeping obliquely, reddish violet coloured on the outside. Stems several, scarcely half a span in height, all prostrate, with the flowering tops curved upwards; they are smooth, round, tinged with reddish violet, leafy. Leaves copious, scattered, fleshy, very smooth, deep green, with sometimes a glaucous hue, but less than in the preceding; the lower obovate-oblong, somewhat decurrent, toothed towards the top; the upper sessile, oblong, subovate, quite entire, without any auricles at the base. Each flower pedicelled, all

together forming first a corymb, afterwards a raceme. Calycine leaflets ovate, naked, entire, somewhat tinged with red on the outside, half the length of the corolla. Petals obovate-oblong, entire, equal, lilac-coloured. The flowers have the same pleasant smell with those of the preceding, which it is strange no author has observed. Silicle naked, from an ovate base rising into a four-sided pyramid, as in the preceding species. Seeds two, rufous, in each cell.

Native of Carinthia, flowering at the beginning of may^q.

Professor Jacquin doubts whether the *Iberis rotundifolia* of Scopoli be the same with this or the *rotundifolia*. He is of opinion that it does not agree with either of them.

8. Root of common Purple Candy-tuft is annual, white, oblong, fusiform. Stem upright, leafy, half a foot or a span to a foot in height, subangular, green, smooth, branching. Leaves frequent, alternate, lanceolate, acuminate, smooth. Flowers in a hemispherical corymb on peduncles half an inch in length. Outer petals more than twice as large as the inner ones^r. Silicle ovate-rounded, triangular-emarginate at the top, so as to be as it were two-eared, a little flattened, convex on one side, flat or slightly concave on the other: valves navicular, with the keel broad, leafy-compressed and as it were extenuated into a wing; partition narrow, contrary to the valves, and bipartite. Seeds solitary, ovate, flattened, a little beaked near the umbilicus, ferruginous-rufescent^s.

Native of the South of Europe. Cultivated in 1596 by Gerarde^t.]

The usual colour of the flowers is a pale purple, but there is one variety with bright purple, and another with white flowers; the latter however is seldom seen in our gardens, the seeds of the *amara* being commonly substituted for it. It flowers in june and july, and may be continued in succession till autumn.

[Gerarde says, that Candy-tuft, which he calls Candia Mustard or Candia Thlaspi grows in Austria, in untolled places, and by highway sides: in Crete or Candia, in Spain and Italy, and such like hot regions, whence he received seed, by the liberality of the right honourable the Lord Edward Zouche, at his return into England from those parts. Parkinson calls it Spanish or Candy Tufts.

9. Linneus says that the White Candy-tuft resembles the preceding very much, only it is smaller. It is however sufficiently distinct in several circumstances. Stem seven or eight inches high, pubescent, somewhat rugged, branched; branches diffused, alternate, the lower ones sometimes opposite, not rising all to the same height. Leaves alternate oblanceolate or linear-lanceolate, blunt, sessile, decurrent, bright green, thickish, smooth, the lower ones ferrate, the rest toothletted especially in front, or with a tooth or two on each side. Flowers white, in a terminating spike-like raceme; or rather, in a corymb lengthening into a raceme as the inflorescence advances. Calyx erect. The two outer petals double the length of the two inner ones^u. Silicles rounder and a little smaller than in the preceding, in other respects resembling those. Seeds more elliptic, flattened like a lens, paler and surrounded with a very narrow rim of a deeper colour^v.

Native of Switzerland, Germany, Austria, South of France and England. In Oxfordshire about Henley, Nettlebed and Mungewell. In Berkshire about Wallingford, common. Not mentioned as wild in England by any of our old writers.

10. Root simple, white, twisted, having few fibres. Root-leaves lanceolate-linear, ferrate, withering and falling as the stem advances; stem-leaves linear; quite entire, sessile, few, gradually shorter, sharpish. Stem herbaceous, straight, slender, branched at top, branches mostly bifid. Flowers in corymbs, the outer ones peduncled, with the two outer petals larger. Silicles very retuse^w.

^f Curtis.

^g Dillenius.

^h Hort. kew.

ⁱ Villars, Gerard, Allioni.

^k Villars.

^l Gouan illustr. and Villars.

^m Linn.

ⁿ Haller.

^o Scopoli.

^p Hort. kew.

^q Jacq. misc.

^r Hort. kew.

^s Krockner and Ray.

^t Pollich and Villars.

^u Gerard.

^v Gartner.

^w Gartner.

According to Linneus it resembles *Lepidium graminifolium* very much, but is however different. Root-leaves somewhat toothed, smooth. Silicles ovate, two-toothed with a truncated tip, whereas in *L. graminifolium* they are ovate-acuminate. The adult plant frequently casts all its leaves.

Gouan says, that the stem puts forth immediately from the root some rigid fastigate purplish branches; that the root-leaves are like those of *Iberis amara*, oblong, blunt, petioled, fleshy, with two or three teeth towards the top, very seldom entire, purplish. Stem-leaves loosely alternate, longer, narrower and quite entire. Flowers purple, first in corymbs, then in racemes. Silicles ovate, as it were cut off, with diverging points on each side, and toothed margins.

Native of Spain, Portugal, and Provence.—Cultivated by Mr. Miller in 1759. It flowers in July, and is annual².]

11. This seldom grows so large as the purple Candy-tuft, and the flowers are much smaller, but have an agreeable odour.

[The flowers are in close corymbs and of a snowy whiteness.—Native of the mountains near Geneva. Cultivated by Mr. Miller in 1759.

12. Native of Arabia and Cappadocia.

13. Stems scarcely a hand's breadth (or from two to four inches in height, numerous, decumbent when young, rising as they advance, and finally upright, simple, round and smooth, naked or with one (two or three) sessile leaves below the middle. Root-leaves spread on the ground in a circle, petioled, somewhat more than an inch in length, smooth, sinuated and pinnatifid, obtuse, the lobes in some opposite, in others alternate, the terminating one very large and rounded. Flowers in a terminating spike-like raceme, small, white, and without scent; on peduncles half an inch long, and spreading wide. Calycine leaflets broad-lanceolate. Corolla larger than the calyx; the two outer petals larger, spreading, the two inner bent in. Silicle somewhat convex on one side, flat on the other, bordered with a projecting margin, and marked with a perpendicular line, which is the edge of the partition. Seeds generally two in each cavity.

The more luxuriant the plant, the more it is disposed to produce leaves on the stem; in this state the lower ones are divided into three or five segments, but the upper ones are undivided and lanceolate. The flowers, which are very minute, appear in May and June. The seed-vessels, which are large in proportion to the plant, succeed in July.

Native of most parts of Europe, in dry and barren soils. With us, near London sparingly; as on Hounslow heath, Putney and Barnes commons, near Hampton-court and Richmond. Blackheath by the road from Greenwich to Lewisham. Ilford in Essex. Near Gamlingay in Cambridgeshire, Bungay in Suffolk, Norwich. Pensham in Worcestershire. Harmerhill near Salop. Nottingham-park. Little Creaton in Northamptonshire. Between Corby Castle and Carlisle. And in Scotland³.

14. Stem about half a foot in height, commonly simple, but sometimes with a branch or two. Leaves pinnatifid, sinuated or merely toothed. Flowers in a corymb, clear white, seldom purple. Silicle cleft at the end⁴. Linneus remarks, that the calyx is red, but the petals white, and when in fruit the form of the corymb continues, as in *I. umbellata*, without lengthening out into a raceme or thyrses, as it does in some of the species⁵.

Native of the South of Europe. Cultivated in 1640. It flowers from June to August⁶.]

PROPAGATION AND CULTURE.

1. This plant is somewhat tender, therefore is generally preserved in green-houses in winter, where, being placed among other low plants toward the front of the house, it makes an agreeable variety, as it continues flowering all the winter. But although it is commonly so treated, yet in moderate winters this plant will live in the open air, if it be planted in a warm

situation and on a dry soil; and if, in very hard frost, it be covered either with mats, reeds, straw, or peas-haulm, it may be preserved very well; and these plants which grow in the full ground, will thrive better, and produce a greater number of flowers, than those which are kept in pots; but the soil in which these are planted, should not be over rich, nor too wet, for in either of these they will grow too vigorous in summer, so will be in greater danger of suffering by the frost in winter; but when they grow on a gravelly soil, or among lime rubbish, their shoots being short, strong, and not so replete with moisture, will better resist the cold.

This plant very rarely produces seeds in England, therefore is only propagated by cuttings, which, if planted during any of the summer months, and shaded from the sun, and duly watered, will be rooted in two months, and may afterwards be either planted in pots, or into the borders where they are designed to stand.

The variety with striped leaves not being so hardy as this, must be treated more tenderly in winter, and may be increased by cuttings in the same manner.

2. This rarely producing seeds in England, is increased by slips, which in summer easily take root. The plants may be treated in the same manner with the first sort, and will thrive in the open air.

[4. This is easily raised from cuttings, and may be kept through the winter in a common hot-bed frame; and in mild winters will stand abroad, especially if sheltered among rock-work. Moisture often proves fatal to it in the winter season, as it does to many other confined plants in mild moist seasons. In this case the superfluous moisture must be dissipated by gentle heat⁷.]

5, 6, 7. Are propagated by seeds, sown on a shady border in autumn; when the plants are strong enough to remove, transplant them into a shady border, where they are to remain, and they will require no other care but to keep them clean from weeds.

8, 9, 11. These are sown in small patches in the borders of the flower-garden; and by sowing them at three or four different times, there may be a succession of them in flower till autumn. When they are grown up they should be thinned, that they may put out side branches, flower stronger, and continue longer in beauty. Formerly the eighth was sown for edgings, but these and all annuals are unfit for that purpose.

10. This may be increased by cuttings in the same manner as the first sort. Some of the plants may be set on a warm border, in a dry soil; leaving two or three in pots to be sheltered under a frame in winter, in case of a severe frost.

13. This diminutive plant is rarely admitted into gardens. The seeds may be sown in autumn where the plants are designed to remain, and require no other care but to keep them clean from weeds.

[*IBERIS*. See *Cardamine*, *Lepidium* and *Thlaspi*.]

[*IBIPITANGA*. See *Plinia*.]

[*IBISCUS*. See *Hibiscus*.]

[*ICACO*. See *Chrysobalanus*.]

[*ICCICARIBA*. See *Amyris*.]

ICE HOUSE, a building sunk in the ground to preserve Ice for the use of a family in the summer season.

In the choice of a situation for an Ice-house, the principal regard should be, that of a dry spot of ground, for wherever there is moisture, the ice will melt; therefore in all strong lands, which detain the wet, there cannot be too much care taken to make drains all round the building to carry off all moisture; for when this is lodged near the building, it will occasion a damp there, which will always be prejudicial to the keeping of the ice.

The next consideration must be, to have the place so elevated, that there may be descent enough to carry off whatever wet may happen near the building, or from the ice melting; also, that the place be as much exposed to the sun and air as possible, and not placed under the drip, or in the shade of trees, as hath been

² Hort. kew.

³ Villars.

⁴ Curtis, Woodw. Mss. Withering.

⁵ Linn. mant.

⁶ Hort. kew.

⁷ Curtis.

so often practised, under a false notion, that if it should be exposed to the sun, the ice will melt away in summer, which never can be the case where there is sufficient care taken to exclude the outward air (which must always be regarded in the building of these houses) for the heat of the sun can never penetrate through the double arches of the building; so as to add any warmth to the air; but when the building is entirely open to the sun and wind, all damps and vapours will thereby be removed from about the building, which can never be kept too dry, or free from moist vapours. As to the figure of the building, that may be according to the fancy of the owner; but for the well into which the ice is to be put, a circular figure is the most convenient; the depth of the well, as also the diameter of it, must be proportioned to the quantity of ice wanted, but it is always best to have enough; for when the house is well built, it will keep the ice for two or three years: and there will be this advantage in having it large enough to contain ice for two years consumption, that if a mild winter should happen, when there is not ice to be had, there will be a stock to supply the want.

If the quantity wanting is not great, a well of six feet diameter, and eight feet deep, will be large enough; but for a large consumption, it should not be less than nine or ten feet diameter, and as many deep: where the situation is either dry chalk, gravel, or sand, the pit may be entirely below the surface of the ground; but in strong loam, clay, or moist ground, it will be the best way to raise it so high above the surface, as that there may be no danger from the wet.

At the bottom of the well there should be a space left, about two feet deep, to receive any moisture which may drain from the ice, and a small underground drain should be laid from this, to carry off the wet; over this space of two feet, should be placed a strong grate of wood, to let the moisture fall down, which may at any time happen, from melting of the ice. The sides of this well must be walled up with brick or stone, at least two feet thick; but if it is yet thicker, it will be better, because the thicker the walls are made, the less danger there will be of the well being affected by any external cause. When the well is brought within three feet of the surface, there must be another outer arch or wall begun, which must be carried up to the height of the top of the intended arch of the well; and if there is a second arch turned over from this well, it will add to the goodness of the house; but this must be submitted to the person who builds, if he will be at the expense; but if not, then the plate into which the roof is to be framed, must be laid on this outer wall, which should be carried high enough above the inner arch, to admit of a door-way in, to get out the ice. If the building is to be covered with slates or tiles, there should be a thickness of Reeds laid under, to keep out the sun and external air; if these Reeds are laid two feet thick, and plastered over with lime and hair, there will be no danger of the heat getting through it.

The external wall need not be built circular, but of any other figure, either square, hexangular, or octangular; and where this stands much in sight may be so contrived as to make it a good object. I have seen an Ice-house built in such a manner as to have a handsome alcove seat in the front, and behind this seat was contrived a passage to get out and put in the ice; and by having the entrance behind, to the north aspect, a small passage being next the seat, through which a person might enter to take out the ice, and a large door being contrived with a porch, wide enough for a small cart to back in, to shoot down the ice upon the floor near the mouth of the well, where it may be well broken, before it is put down. The aperture of this mouth of the well need not be more than two feet and a half diameter, which will be large enough to put down the ice, and if it was greater, it would be inconvenient; there should be a stone fitted to stop this aperture, which must be closed up as secure as possible, after the ice is put in, and all the vacant space above and between this and the outer door, must be filled close with Barley Straw, to exclude the air; so

the door to enter for taking out the ice should be on the opposite side, immediately behind the alcove seat, as was before-mentioned; and this door should be no larger than is absolutely necessary for the coming at the ice, and must be strong and close to exclude the air; and at five or six feet distance from this another door should be contrived, which should be closely shut before the inner door is opened, whenever the ice is taken out.

The building being finished, should have time to dry before the ice is put into it; for when the walls are green, the damp of them frequently melts the ice. At the bottom of the well, upon the wooden grate, should be laid some small faggots; and if upon these a layer of Reeds is placed smooth for the ice to lie upon, it will be better than Straw, which is commonly used; and in the choice of the ice, the thinner it is, the better it may be broken to powder; for the smaller it is broken, the better it will unite when put into the well: in putting of it in, there must be care taken to ram it close, as also, by laying Straw, to allow a vacancy all round next the wall, of about two inches; this is to give passage to any moisture, which may be occasioned by the melting of some of the ice on the top, which, if pent up, will melt the ice downward; when the ice is put into the well, if there is a little salt-petre mixed at every ten inches or a foot thickness, it will cause the ice to join more closely into a solid mass.

[The ice being all incorporated into one solid body, there must be a crow or other iron instrument always in readiness to break it up; taking out no more at a time than is wanted.

Mr. Miller proposes to make use of the Ice-House as an ornamental building; that however is seldom done: and it is generally placed in a sequestered spot, on the side of a hill or sloping ground, the base of which is lower than the bottom of the well; the outside being well banked up with earth, the better to keep out all air and heat, and the embankment being neatly covered with turf.

For the dimensions and other particulars of the building see the plate.

ICE PLANT. See *Mesembryanthemum*.

ICHTHYOMETHIA. See *Piscidia*.

JERUSALEM ARTICHOKE. See *Helianthus*.

———— COWSLIP. See *Pulmonaria*.

———— SAGE. See *Phlomis*.

JESUIT'S BARK. See *Cinchona*.

JEW'S MALLOW. See *Corchorus*.

IGNATIA.

Lin. gen. Schreb. n. 340. Suppl. 20. Gært. t. 179.

Strychnos. Juss. 149. Cyrtanthus. Schreb. gen.

n. 302. Posoqueria. Aubl. t. 51. Juss. 201.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Luridæ.—Apocineæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, short, bell-shaped; five-toothed: *teeth* upright, ovate, obtuse.

COR. one-petalled, funnel-form. *Tube* filiform, of a span's length, smooth, upright. *Border* flat, five-parted: *divisions* oblong, obtuse, perfectly entire.

STAM. *Filaments* five, inserted into the receptacle, length of the tube, thread-shaped, very smooth. *Anthers* five, converging into an oblong *column* which is five-cornered, sharp and rough.

PIST. *Germ* very small, ovate, very smooth. *Style* filiform, length of the stamens. *Stigma* slender, two-parted: *divisions* awl-shaped.

PER. *Berry* pear-shaped, large, one-celled, with a thick woody bark.

SEEDS several, covered with a thin cuticle, solid, horny, very hard; the *lateral* ones irregularly tetragonal, with the inner sides flat, the outward gibbous, the interior oblique: the *central* one hexagonal with flat sides.

ESSENTIAL CHARACTER.

Cal. five-toothed. *Cor.* funnel-form, very long. *Fruit* one-celled, many-seeded.

SPECIES.

1. *Ignatia amara.*

Lin. syst. 227. suppl. 149. Gært. fruct. 2. 477.

Berg. mat. med. 149. (Strychnos).

Ignatiana

Ignatiana philippinica. *Lour. cochinch.* 126.

Leaves ovate acute, stem scandent, peduncles axillary, four-flowered or thereabouts.

2. *Ignatia longiflora*

Posoqueria longiflora. *Aubl. guian.* 134. t. 51.

Leaves oblong waving acuminate, peduncles terminating, six-flowered or thereabouts.

DESCRIPTIONS, &c.

1. This is a very branching tree, the branches long, round, very smooth, climbing. Leaves opposite, petioled, a span long, quite entire, veined, very smooth, flat. Flowers in small panicles; peduncles bearing from three to five flowers; pedicels short, round, rigid. Flowers very long, nodding, white, having the smell of Jasmine. Fruit ovate, with a very smooth dry rind, narrowed at the neck, the size of a Bonchretien Pear^a.

Loureiro, who saw it in a growing state, describes it as a large shrub, with a trunk like a tree, and many, very long, climbing, unarmed branches. Leaves large. The tube of the corolla reclining. The fruit a large roundish berry, attenuated at the neck, juiceless; the rind very smooth, woody, whitish, like the bottle Gourd when ripe. Seeds three-cornered ovate, brownish ash-colour, smooth, of a horny substance, and a very bitter taste.

Gærtner says, that the seeds are rather large, and different in shape; some, which seem to be central, oblong, very bluntly angular; others, towards the outside, shorter, quadrilateral, one side larger and a little convex, the three others flat, triangular, converging into a very blunt pyramid. All are of a dusky brown or smoky colour, the surface rugged with very minute wrinkles, and the umbilicus perforated on the edge or at the base.

Jussieu joins this plant with *Strychnos*, nor is the fruit in the two genera very different, except that the cotyledons are petioled, which is peculiar to *Ignatia* and *Gyrocarpus*^b.

Native of the East Indies and the Philippine islands, whence it has been transported to Cochinchina and other countries for cultivation.

The seeds, which are known by the name of St. Ignatius's beans, are much used in the East Indies, and are reputed to be tonic, diaphoretic, emmenagogue, and anthelmintic. They are used in the pituitary apoplexy, colic, cardialgia, intermittent fevers, suppression of the menses, and bites of venomous animals. They may be taken internally from six to twelve grains, in powder, either in wine or water, generally with good effect, sometimes without any, but never with any danger. Too large a dose will bring on vertigo and convulsions, but they are easily cured by lemonade, drank largely.

What the younger Linneus affirms, namely that the seeds are equally poisonous to animals with *nux vomica*, is a mistake; for a whole nut, weighing a dram, has been given to oxen, buffaloes, horses and swine, without any damage. Nor is it true that these seeds are never spoiled by keeping, or by worms, for they are frequently found with holes eaten in them, especially in the East Indies and in moist places^c.

2. This is a branching shrub five or six feet high, with a smooth green bark, and a white hard wood. It begins to put forth branches at two feet from the ground: they are knotty, twisted and subdivided into opposite twigs. At each joint are two leaves opposite, smooth, entire, thin, oblong, waving on the edge, ending in a long point: petiole an inch long, convex below, channelled above; the largest leaves are seven inches long, and two and a half wide: between them on each side is a broad, stiff, sharp stipule. Flowers terminating, about six in number, on a common peduncle, having two scales at its base, besides three or four smaller ones scattered on each pedicel. Corolla white, with a tube a foot in length.

Native of Guiana on the banks of large rivers: flowering in november, and fruiting in january. The Caribbee name is *Aymara-Posoqueri*^d.]

^a Linn. suppl.

^b Gærtner.
^d Aublet.

^c Loureiro.

ILEX, (of Pliny, Varro, &c.)

Lin. gen. n. 172. *Reich.* 184. *Schreb.* 232.

Juss. 379. *Aquifolium*. *Tournef.* 371.

Class. 4. 3. *Tetrandria Tetragynia*.

Polygamia Dioecia, *Huds.*

Nat. order of Dumosæ.—Rhamni, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* four-toothed, very small, permanent.

COR. one-petalled; four-parted; wheel-shaped: *divisions* roundish, spreading, rather large, with cohering claws.

STAM. *Filaments* four, awl-shaped, shorter than the corolla. *Antthers* small.

PIST. *Germi* roundish. *Style* none. *Stigmas* four, obtuse.

PER. *Berry* roundish, four-celled.

SEED solitary, bony, oblong, obtuse, gibbous on one side, cornered on the other.

ESSENTIAL CHARACTER.

Cal. four-toothed. *Cor.* wheel-shaped. *Style* none.

Berry four-seeded.

SPECIES.

1. *Ilex Aquifolium*. *Common Holly*.

Lin. spec. 181. *syft.* 168. *Reich.* 1. 354. *hort.*

cliff. 40. *upf.* 32. *Huds. angl.* 446. *Wither.*

ar. 168. *ed.* 3. 210. *Græn. virg.* 12. *Leers*

herborn. n. 124. *Villars. dauph.* 2. 337. *Ger.*

prov. 460. *Fl. dan. t.* 508. *Mill. fig. t.* 46.

Hunt. Evel. 262. *Blackw. t.* 205. *Thunb. jap.*

79. *Lour. cochinch.* 91. *Plenck. it.* 72.

Aquifolium. *Hall. herb. n.* 667.—*Ilex*. *Scop. carn.*

n. 177.

α. *Ilex aculeata baccifera*. *Baub. pin.* 425.

Aquifolium. *Matth.* 161. *Camer. epit.* 84.—

f. *Agrifolium vulgo*. *Baub. hist.* 1. 114. *Tourn.*

inst. 600. *Garid. aix.* 37.

Agrifolium. *Ger.* 1155. *emac.* 1338. *Raii hist.*

1622. *syn.* 466.—*baccis luteis. n.* 2.

A. f. *Aquifolium*. *Park. theat.* 1487. 1.

β. *Ilex heterophylla*. *Various-leaved Holly*.

Ait. hort. kew. 1. 169.

Leaves toothed spiny and entire.

γ. *Ilex crassifolia*. *Thick-leaved Holly*.

Ait. hort. kew. 1. 169.

Leaves thicker equally serrate.

δ. *Ilex recurva*. *Slender Holly*.

Ait. hort. kew. 1. 169.

Leaves narrower recurved.

ε. *Ilex ferox*. *Hedge-hog Holly*.

Ait. hort. kew. 169. *Lin. syft.* 168. β. *Reich.* 1.

354. β.

I. *echinata*. *Mill. dist. n.* 2.

Aquifolium echinata superflue. *Corn. canad.* 180.

Leaves with the upper surface spiny.

Leaves ovate acute spiny shining waved, flowers axil-

lary subumbelled.

[2. *Ilex opaca*. *Carolina Holly*.

Ait. hort. kew. 1. 169.

Leaves ovate acute spiny smooth flat, flowers scattered

at the base of the last year's shoots.

3. *Ilex Perado*. *Thick-leaved smooth Holly*.

Ait. hort. kew. 1. 169.

Leaves ovate with a point, unarmed, almost entire.

4. *Ilex Prinoides*. *Deciduous Holly*.

Ait. hort. kew. 1. 169.

Leaves elliptic-lanceolate acute deciduous serrate, serratures without prickles.

5. *Ilex Cassine*. *Daboon Holly*.

Lin. spec. 181. *Reich.* 1. 354. *hort. cliff.* 40. *mat.*

med. 54.]

I. *caroliniana*. *Mill. dist. n.* 3.

Aquifolium carolinense, fol. dentatis, baccis rubris.

Catesb. car. 1. t. 31.

[α. I. *Cassine latifolia*. *Broad-leaved Daboon Holly*.

Leaves lanceolate-oblong serrate.

β. I. *C. angustifolia*. *Narrow-leaved Daboon Holly*.

Leaves lanceolate, almost quite entire.

Ait. hort. kew. 1. 170.

Leaves alternate distant evergreen lanceolate serrate,

serratures acuminate.

6. *Ilex vomitoria*. *South-sea Tea or Evergreen Cassine*.

Ait. hort. kew. 1. 170.]

- Cassine Paragua. Mill. dict. n. 2. fig. t. 83. f. 2. Pluk. mant. t. 376. f. 2. Catesb. car. 2. t. 57.
[Leaves alternate distant oblong bluntish crenate-serrate, serratures without prickles.]
7. Ilex asiatica.
Lin. spec. 181. Reich. 1. 354.
Leaves broad-lanceolate blunt quite entire.
 8. Ilex cuneifolia.
Lin. spec. 181. Reich. 1. 354. Plum. ic. 118. f. 2.
Leaves wedge-form three-cusped.
 9. Ilex integra.
Lin. syst. 168. Thunb. jap. 77.
Leaves oblong obtuse entire, peduncles one-flowered.
 10. Ilex rotunda.
Lin. syst. 168. Thunb. jap. 77.
Leaves rounded acute entire, peduncles umbelliferous.
 11. Ilex crenata.
Lin. syst. 168. Thunb. jap. 78.
Leaves ovate crenate, peduncles on the branches scattered bearing two or three-flowers.
 12. Ilex emarginata.
Lin. syst. 168. Thunb. jap. 78.
Leaves obovate emarginate, flowers axillary usually in pairs.
 13. Ilex serrata.
Lin. syst. 168. Thunb. jap. 78.
Leaves ovate acute ciliate serrate, flowers axillary solitary.
 14. Ilex japonica.
Lin. syst. 168. Thunb. jap. 79.
Leaves opposite sessile, flowers in terminating racemes.
 15. Ilex latifolia.
Lin. syst. 168. Thunb. jap. 79.
Leaves ovate serrate, flowers axillary aggregate.
 16. Ilex crocea.
Thunb. prodr. 32.
Leaves oblong serrate, serratures ciliate-spiny.

DESCRIPTIONS, &c.

This genus consists of small trees or shrubs; with alternate leaves, evergreen, toothed and thorny; and axillary many-flowered peduncles.*

1. The Common Holly rises from twenty to thirty feet, and sometimes more. [Bradley mentions a tree sixty feet in height]; but its ordinary height is not above twenty-five feet. The trunk is covered with a grayish smooth bark, and those trees which are not lopped or browsed by cattle, are commonly furnished with branches the greatest part of their length, and form a sort of cone. Leaves petioled, about three inches long and one and a half broad, of a lucid green on their upper surface, but pale on their under, having a strong midrib; the edges are indented and waved, with sharp thorns terminating each of the points, some raised upwards, others bent downwards, and being very stiff, the leaves are troublesome to handle; [these thorns are fixed into a strong woody border which surrounds the leaf. When this tree grows naturally, it has flat, entire leaves, without thorns, only ending in a sharp point, mixed with the others, especially as it advances in age.] Flowers in clusters from the base of the petioles [from a sort of scale upon the branch, With.] on very short peduncles, each sustaining five, six or more flowers, [generally three together, W.] appearing in may. The corolla of a dirty white. They are succeeded by roundish berries, [crowned with the calyx, which turns black, W.] turning to a beautiful scarlet about michaelmas, and continuing the greater part of the winter. [Seeds three or four, W.]

The difference of sexes in the flowers of the Holly was first observed by my father. In his garden at Streat-ham in Surry he had many of these trees, which before he had possession of the place were shorn into round heads: he emancipated them from their slavery, pruned them, and trained up leading shoots; seeming glad to be released from their shackles, they quickly shot up into goodly trees, and soon rewarded him with this discovery concerning the nature of their flowers, which he communicated to the Royal Society, and is printed in their transactions. I perfectly recollect hav-

ing carefully attended to the flowering of these trees during several seasons, and having uniformly observed hermaphrodite flowers on some and male flowers on others: in the former the anthers were different from those in the male flowers, and appeared to be effete, and there never was a single male flower mixed with the hermaphrodite, or a hermaphrodite with the males, or any flower except the two here described. Others however have remarked a different and more varied disposition of the sexes.]

Mr. Miller says, in some plants I have observed the flowers were wholly male and produced no berries, in others female and hermaphrodite flowers, but upon some large old trees growing in Windsor forest, I have observed all three upon the same trees. [The late Sir William Watson also made an observation of the same sort. Gerard remarked hermaphrodite flowers with five petals on one tree, and male flowers with a four-parted petal and an abortive germ on another tree. Certainly in the trees which I observed all the petals were four-parted; and Dr. Withering says, that he found the Holly in flower so late as the second week in june, and then all the flowers had four stamens and four pistils. Haller also remarks, that in all the flowers which he had an opportunity of examining the corolla had the same structure. Mr. Hudson however describes a five-toothed calyx and five-parted corolla in the hermaphrodite with five stamens, four stigmas, and a four-seeded berry; in the male, a four-toothed calyx, a four-parted corolla and four stamens. But whether this be from his own observation, or founded only on Gerard's, we are at a loss to know. He has removed the Holly from the class where Linneus and others have placed it into the class Polygamia Dioecia, where it should properly be found according to the observations given above. But it is very well remarked by Dr. Stokes, that before it be removed to another class, it is proper to show, that the majority of the other species are liable to similar sexual variations. In the mean time the class Polygamia itself seems to be vanishing from the system.]

The common Holly grows wild in many parts of Europe, in North America, Japan, Cochinchina, &c.] It is found in woods and forests in many parts of England. [It grows so spontaneously, says Mr. Evelyn, in this part of Surry, that the large vale near my own dwelling was anciently called *Holmesdale*: in Dungeness in Kent, it grows naturally among the pebbles upon the very beach. Dr. Withering says, that on the north side of the Wrekin in Shropshire the trees grow to a large size. The Holly is very common in the chiltern division of Buckinghamshire, and where permitted has a considerable growth. Mr. Bradley tells us, that he has seen it above sixty feet high in the Holly walk near Frensham in Surry.]

The Holly is called also in English Hulver and Holme. It is known by the name of Hulver in Norfolk. In German it has a great variety of appellations, *Steckpalme, Stecheiche, Steckbaum, Stecklaub, Hulse, Hulsenbaum, Hulsentrauch, Hulst, Hulch, Holst, Hubze, Hullgehobz, Myrtendorn, Christdorn, Mausdorn, Zwiefeldorn, Kleesebusch, Steckapsel, Steckwinde, Walddistel.* In Danish, *Stikpalme, Maretorn, Christtorn, Skoutistel.* In Swedish, *Ferneke, Christtorn.* In French, *le Houx, le grand Housson, L'Agron, grand Pardon, Bois Franc.* In Italian, *Agrifoglio, Alloro spinoso.* In Spanish, *Acebo, Agrifolio.* In Portuguese, *Azevinho, Agrifolio, Acrifolio, Aquifolio.* In Russian, *Waesofscheld, Ostrokrof, Padub.*

The Holly makes an impenetrable fence, and bears cropping well, nor is its verdure, or the beauty of its scarlet berries, ever observed to suffer from the severest of our winters^b. It would claim the preference for this purpose even to the Hawthorn; were it not for the slowness of its growth whilst young, and the difficulty of transplanting it when grown to a moderate size. But when it once takes well, the hedge may be rendered so close and thick, as to keep out all sorts of animals^c. Mr. Evelyn's impregnable Holly hedge, four hundred feet in length, nine feet high, and five

* Jusseu.

^b Withering.

^c Hunter's Evelyn.

in diameter, has been much celebrated by himself, Ray and others.

It does best in cold, stony lands, according to Dr. Hunter; it certainly prospers on gravel over chalk. It refuses not, says Mr. Boucher, the poorest hot sandy gravelly and rocky ground, nor the coldest clay. On the latter, however, I have never seen it advance but with most discouraging slowness. Mr. Marshall relates, that in the Wolds of Yorkshire, he has seen the Holly raised (by the practice of a man who has paid great attention to the business of hedge-planting) with an unusual degree of rapidity and certainty^d. This man's secret would be of inestimable value to the public.]

Mr. Miller directs that a Holly hedge should never be clipped with sheers, because when the leaves are cut through the middle, they are rendered unsightly, and should therefore be cut with a knife close to a leaf; and although by this method, it is not shorn so even, yet it will have a much better appearance. [This may be an attention due to a garden hedge, but it is obvious that on a large scale it is impracticable, and except for mere ornament it is unnecessary. Mr. Boucher adds, that if a hedge be clipped at all, it should not be done later in the season than July.

The common Holly being a very beautiful tree in winter, deserves a place in all plantations of evergreen trees and shrubs, where its shining leaves and scarlet berries make a fine variety; and if a few of the best variegated sorts are properly intermixed, they will enliven the scene.

The wood of this tree, says Mr. Evelyn, is the whitest of all hard woods, and used by the inlayer, especially under thin plates of ivory. The mill-wright, turner and engraver prefer it to any other. It makes the best handles and stocks for tools, flails, the best riding-rods and carter's whips; bowls, chivers, and pins for blocks; also it excels for door-bars and bolts.] Mr. Miller adds, that it is made into hones for setting razors; that the wood taking a fine polish, is very proper for several kinds of furniture; and that he had seen the floor of a room laid in compartments with this and mahogany, which had a very pretty effect. [It is much used, with Box, Yew, White-thorn, &c. in the small trinkets and other works, carried on in and about Tunbridge, and commonly called Tunbridge ware. The wood, says Dr. Withering, is used in fining, and is sometimes stained black to imitate Ebony.

Sheep and deer are fed during winter with the crop-pings. Birds eat the berries. The bark fermented, and afterwards washed from the woody fibres, makes the common Birdlime.

Varieties.

Forty or fifty varieties, depending on the variegations of the leaves or thorns, and the colour of the berries, all derived from this one species,] are raised by the nursery-gardeners for sale, and formerly were in very great esteem, but are now less regarded, since the old taste of filling gardens with shorn Ever-greens has been laid aside; a few, however, of the most lively varieties should be admitted in plantations, and will have a good effect in the winter season, if they are properly disposed.

[Of the varieties enumerated above, the Hedge-hog Holly is the most remarkable. Mr. Miller will have it to be a distinct species; and says,] that the leaves are not so long as those of the common Holly, and have the edges armed with stronger thorns, standing closer together; the upper surface set very close, with short prickles. It grows naturally in Canada, and keeping its difference when raised from the berries, Mr. Miller makes no doubt of its being a distinct species.

There are two varieties of this with variegated leaves, one yellow, and the other white.

[The Hedge-hog Holly was cultivated in the garden of Compton, Bishop of London, at Fulham, by that ingenious and skilful gardener Mr. George Lon-

don, who is supposed to have introduced it first from France^e.

The variety with yellow berries has been found wild in England by Wardour Castle, and Mr. Dale was shown it at Wiston near Bures in Suffolk^f.]

Mr. Miller mentions the following varieties as the most beautiful. Painted Lady. British. Bradley's best. Phyllis or Cream. Milkmaid. Prichet's best. Cheyne's. Glory of the West. Broderick's. Partridge's. Herefordshire White. Blind's Cream. Longstaff's. Eales's. Gold-edged, and Silver-edged Hedge-hog Holly.

[To these may be added, from later catalogues, Box-leaved green. Chohole. Chimney-sweeper. Glory of the East. Wife's. Gray's. Common blotched. Yellow blotched Hedge-hog. Blotched yellow-berried. Mason's copper-coloured. Sir Thomas Frankland's Britain. Whitmill's. Bradley's long-leaved. Bradley's yellow. Bridgman's. Wells's. Glass's. Bagshot. Brownrig's. Lanton. Aslet's. The Union. Fuller's Cream. Capel's Mottled. White-berried.—But enough of mere arbitrary names, without distinction.

2. Native of Carolina. Cultivated in 1744, by Archibald, Duke of Argyle. It flowers in May and June.

3. Native of Madeira. Introduced in 1760, by Mr. James Gordon. It flowers in April and May.

4. Native of Carolina and Virginia. Cultivated before 1760, by Archibald, Duke of Argyle. It flowers in July^g. Of these we have no descriptions.]

5. The Dahoon Holly rises with an upright branching stem to the height of eighteen or twenty feet; the bark of the old stems is of a brown colour, but that of the younger stems or branches is green and smooth. Leaves more than four inches long, and one and a quarter broad in the broadest part, of a light green and thick consistence; the upper part is serrate, each serrature ending in a small sharp spine; they stand alternately on every side of the branches, on very short foot-stalks. The flowers come out in thick clusters from the side of the stalks; they are white, and shaped like those of the Common Holly, but smaller. Both the female and hermaphrodite flowers are succeeded by small roundish berries, making a fine appearance in winter; but they have not as yet produced fruit in England.

Native of Florida and Carolina, whence the seeds were sent [about the year 1726] by Mr. Mark Catesby, who found the trees growing on a swamp at a distance from Charles-town.

[There are two varieties of the Dahoon Holly, as mentioned above, one with broader leaves, and the other with narrower leaves, with scarcely any serratures.]

6. South-sea Tree or Evergreen Cassine rises to the height of ten or twelve feet, sending out branches from the ground upwards, which form themselves into a sort of pyramid. Leaves about the size, shape, texture and colour of the small-leaved Alaternus, but somewhat shorter, and a little broader at the base. The flowers are produced in close whorls at the joints of the branches, near the foot-stalks of the leaves: they are white, and are succeeded by red berries, which continue upon the plants most part of the winter, and being of a bright red colour, make a fine appearance, intermixed with the green leaves. From their continuing so long untouched by birds, in a country where these animals are so numerous, we may conclude that they have some venomous quality in them.

[Native of West Florida^h:] Mr. Miller says, Carolina, and some of the warm parts of Virginia, chiefly near the sea. [It was cultivated here in 1700ⁱ:] and preserved in several curious gardens near London, till the severe winter 1739, when most of them were destroyed. But since that many young plants have been raised from seeds, and have resisted the cold of our winters without covering; though they often suffer in very cold seasons, where they are not very well sheltered.

^e Raii. hist.

^f Ibid.

^g Raii. syn. and Evelyn.

^h Hort. kew.

ⁱ Ibid. from Plukenet, mant. 40.

^d Rur. econ. of Yorksh. 2. 203.

The leaves of this are not so bitter as those of the Cassine or Cassioberry bush, especially when green, and therefore are preferred for making an infusion in the manner of Tea; which is accounted by the Indians very wholesome, and is almost the only physic they use in some parts. At a certain time of the year they come down in droves, from a distance of some hundred miles, to the coast, for the leaves of this tree, which is not known to grow at any considerable distance from the sea. They make a fire on the ground, and putting a great kettle of water on it, they throw in a large quantity of these leaves, and setting themselves round the fire, from a bowl that holds about a pint, they begin drinking large draughts, which in a very short time occasion them to vomit easily and freely: thus, they continue drinking and vomiting for the space of two or three days, until they have sufficiently cleansed themselves; and then every one taking a bundle of the tree to carry away with him, they all retire to their habitations.

This plant is generally supposed to be the same as that which grows in Paraguay, where the Jesuits make a great revenue from the leaves, and of which an account is given by Mons. Frezier.

[7. Native of the East Indies.

8. Native of South America^k.

9. Stem shrubby, upright. Branches and branchlets alternate, angular, spreading, brown. Leaves ovate, quite entire, with the margin a little bent back, pale underneath, an inch long. Petioles three-sided, short. Flowers in a sessile umbel. Peduncles in fours or thereabouts, angular, erect, very short.

10. Stem shrubby. Branches subumbelled, somewhat knobbed. Leaves towards the end of the branchlets, scattered, frequent, rounded-ovate, smooth, paler underneath, an inch and half long, on petioles shorter by half than the leaves themselves.

11. Stem shrubby, upright. Branches and branchlets, roundish, somewhat knobbed and spreading. Leaves scattered, blunt, with a reflex margin, pale underneath, on very short petioles. Peduncles simple, bifid and trifid, drooping; the pedicels very short.

12. Stem shrubby. Branches round, flexuose, ash-coloured, smooth; branchlets alternate, somewhat striated and spreading. Leaves on very short petioles, blunt, crenate, rolled back at the edge, green above, with a longitudinal groove, pale underneath, with the midrib raised, ever-green. Flowers peduncled, generally two together, very seldom solitary.

13. Stem shrubby, upright, branching very much; branches round, even, smooth, ash-coloured; branchlets filiform, spreading a little. Leaves acuminate, pale underneath, thin, spreading, half an inch long, on petioles scarcely a line in length. Flowers on filiform drooping peduncles, half a line long. Corolla four-petalled. It flowers in June.

14. Stem shrubby, smooth, low. Leaves ovate, acuminate, tooth-spiny, smooth, an inch and half long. Raceme a finger's length. Bractes opposite, or in threes or fours, ovate, acute, smooth, spreading. Peduncles from the axils of the bractes, solitary, one-flowered, capillary, a little longer than the bractes. Calyx shorter than the corolla, appearing rather to be four-leaved. Corolla subrotate: petals obovate, entire, white. Germ superior, oblong. It flowers in April.

15. Stem arborescent. Branches rigid, angular, brown. Leaves bluntish, with a reflex margin, shining above, pale underneath, spreading, two inches broad and three inches long. Petioles slightly three-cornered, channelled. Flowers superaxillary, many together from the gems, on short peduncles^l.

16. Native of the Cape of Good Hope^m.]

PROPAGATION AND CULTURE.

1. The Holly is propagated by seeds, which never come up the first year, but lie in the ground as the Haws do; therefore the berries should be buried in the ground in a large pot or tub one year, and then taken up and sown in the autumn upon a bed exposed

only to the morning sun; the following spring the plants will appear, which must be kept clean from weeds; and if the spring should prove dry, it will be of great service to the plants if they are watered once a week; but they must not have it oftener, nor in too great quantity, for too much moisture is very injurious to these plants when young.

In this seed-bed the plants may remain two years, and then should be transplanted in the autumn, into beds at about six inches distance each way, where they may stand two years longer, during which time they must be kept constantly clean from weeds; and if the plants have thriven well, they will be strong enough to transplant where they are designed to remain; for when they are transplanted at that age, there will be less danger of their failing, and they will grow to a larger size than those which are removed when they are much larger; but if the ground is not ready to receive them at that time, they should be transplanted into a nursery in rows at two feet distance, and one foot asunder in the rows, in which place the plants may remain two years longer; and if they are designed to be grafted or budded with any of the variegated kinds, that should be performed after the plants have grown one year in this nursery; but the plants so budded or grafted should continue two years after in the nursery, that they may make good shoots before they are removed; though the plain ones should not stand longer than two years in the nursery, because when they are older, they do not transplant so well. The best time for removing Hollies is in the autumn, especially in dry land; but where the soil is cold or moist, they may be transplanted with great safety in the spring.

[Hedges of Holly are raised, either by sowing the berries where they are designed to remain, or by plants of three or four years growth; but the latter method is the most usual: early in the autumn is the best time for planting them, especially in dry grounds; or if it be deferred to the end of March, mulch must be laid to their roots, to keep them from drying, and they must be watered once a week, if the season should prove dryⁿ.

Mr. Evelyn affirms, that he has raised hedges four feet high in four years, from seedlings taken out of the woods. I could never meet with any success in this way, and am confident that plants from the nurseries are far more likely to ensure success.

Mr. Bradley observes, that the Holly being tap-rooted, does not love transplanting, unless the roots have been often pruned in the nursery. He says, the earth in which it is to be planted cannot well be too barren; and that September is the best month for transplanting it.

For sowing, Mr. Boutcher directs, that the berries should hang on the trees till December, or if they could be defended from birds, till February or March. As soon as they are gathered throw them into a tub with water, and rub them between your hands, till the seeds are divested of their thick glutinous covering. Pour off the water, with the light seeds that swim; the mucilage, &c.; and spread the seeds on a cloth in a dry airy place, rubbing them often, and giving them a fresh cloth daily till the seeds are quite dry. If this be done in autumn or winter, mix them with sand, and keep them dry till spring; but if they have been gathered in spring, let them be immediately sown. This may be done any time in March or April, when the weather is seasonable, in beds of loose light mould, three feet and a half broad, with alleys of eighteen inches between. Let the berries be sown regularly, and not too close, covering them with fine mould three quarters of an inch deep. The following year, in the beginning of April, draw out such a number of plants as to leave the rest thin enough to receive all the influence of the sun. Plant those that are drawn in a shady border, in rows eighteen inches asunder, and five or six inches distant in the rows. In this situation they may remain three years.

Professor Bradley has given a method of forwarding the germination of these and other hard seeds, for which

^k Linn. spec.

^l Thunb. jap.

^m Thunb. cap.

ⁿ Hunter's Evelyn.

he pretends to have been obliged to the incomparable Sir Isaac Newton.

Having observed that berries of this kind which have been eaten by fowls, and pass through their bodies, begin to vegetate soon afterwards, we have no more to do than to contrive a mixture, which shall have in it a heat and moisture resembling that in the bodies of birds, and to lay the seeds in it for a few days before we sow them. For this purpose provide a bushel of bran, with which mix your seeds, and then wet the whole very well with rain or pond-water, and let the preparation remain ten days without any disturbance in a vessel of wood or stone. In about three days the mixture will begin to ferment, and so continue thirty or forty days, if it be sprinkled from time to time with warm water, as it begins to dry. The heat of this moistened bran will put the berries into a state of vegetation fit for sowing in about a week's time after the fermentation has commenced.

Mr. Evelyn affirms, that the varieties with white berries, and gold and silver leaves, may be raised from seeds sown and planted in a gravelly soil, mixed with store of chalk, and pressed hard down.]

Mr. Miller also says, that he has raised the Hedgehog Holly from the berries, and always found the plants to continue the same.

They are, however, all usually propagated in the nurseries by budding or grafting upon the common Holly.

[The Stocks will be fit to be grafted or budded on at four or five years growth. The grafting must be done in march, and the budding in July^p.]

5. The Dahoon Holly, being tender whilst young, requires protection in the winter till the plants are grown strong and woody, when they may be set in the full ground, in a warm situation, where they will endure the cold of our ordinary winters pretty well; but in severe frost they should be protected, otherwise the cold will destroy them.

It is propagated from seeds, in the same manner as the common sort. The seeds will lie as long in the ground, they should therefore be buried in sand a year, [unless they are forwarded in the ways above directed,] and then taken up and sown in pots filled with light earth, and placed under a frame in winter; in the spring the pots should be plunged into a hot-bed, which will bring up the plants; these must be preserved in the pots whilst young, and sheltered in winter under a common frame till they have obtained strength, when in the spring they may be turned out of the pots, and planted in the full ground, in a warm situation.

These directions may serve for the second and fourth sorts. The third requires the protection of a greenhouse. The other sorts have not been introduced.

6. This also is propagated from seeds, sown in pots filled with light sandy earth, and plunged into a gentle hot-bed, observing to water them frequently, until the plants appear, which is sometimes in five or six weeks time; but at other times they will remain in the ground until the second year; therefore if the plants should not come up in two months, remove the pots into a shady situation, where they may remain till October, being careful to keep them clean from weeds, and now and then in dry weather giving them a little water; then remove the pots into shelter during the winter; and in march put them upon a fresh hot-bed, to forward the seeds for vegetation.

When the plants are come up, expose them to the open air by degrees, to inure them to the climate; yet they should not be exposed to the open sun at first, but have the morning sun only; placing them for some time where they may be sheltered from cold winds. They should be kept in pots four or five years; being slow of growth, and not having strength enough to resist the cold when young.

[ILEX. See *Hippomane* and *Quereus*.

ILIPPE. See *Bassia*.

ILLA. See *Callicarpa*.

ILLECEBRA. See *Sedum*.]

^p New Improvements, part. 2. p. 10.

^p Ibid.

ILLECEBRUM. (*Illecebra* of Pliny. *Pretty or enticing plants*.)

Lin. gen. n. 290. Retz. 313. Schreb. 407. Juss. 89.

Corrigiola. Dill. gen. 169. Moench. 106. Paronychia. Tournef. 281.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Holoraceae*.—*Amaranthi*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-leaved, cartilaginous, five-cornered; with coloured *leaflets*, which are sharp, with distant points, permanent.

COR. none.

STAM. *Filaments* five, capillary, within the calyx. *Antthers* simple.

PIST. *Gerin* ovate, sharp, ending in a short bifid *style*. *Stigma* simple, obtuse.

PER. *Capsule* roundish, acuminate, both ways five-valved, one-celled, covered by the calyx.

SEED single, roundish, sharp on both sides, very large.

OBS. *The fruit in several species is different.*

ESSENTIAL CHARACTER.

Cal. five-leaved, cartilaginous. Cor. none. *Stigma* simple. *Caps.* five-valved, one-seeded.

SPECIES.

[1. *Illecebrum brachiatum*.

Lin. syst. 247. Reich. 1. 580. mant. 213. Pluk. phyt. t. 334. f. 5. (*Amaranthus*).

Achyranthes brachiata. Lin. mant. 50.

Stem upright, herbaceous, brachiate, leaves opposite, even.

2. *Illecebrum sanguinolentum*.

Lin. syst. 248. Reich. 1. 580.

Achyranthes sanguinolenta. Lin. spec. 294.

Verbena rubra. Rumph. amb. 7. 60. t. 27. f. 2.

Frutescent, leaves opposite, spikes compound, beaped.

3. *Illecebrum canariense*. *Canary Illecebrum*.

Lin. syst. 248. suppl. 161.

Shrubby, leaves elliptic, acute, stipules and bractes ovate, shorter, panicles terminating, dichotomous.

4. *Illecebrum lanatum*. *Woolly Illecebrum*.

Lin. syst. 248. Reich. 1. 580. Ait. hort. kew.

1. 289. Lour. cochinch. 162. Vahl. symb. 1. 22.

α. *Achyranthes lanata*. Lin. spec. 296. Mill. fig. t. 11. f. 1.

A. villosa. Forsk. descr. 48. n. 64.

Chenopodium. Burm. zeyl. t. 26. f. 1. *Amaranthus*. Pluk. phyt. t. 75. f. 8.

Spikes subaggregate, shorter than the leaf, branches long, rod-like.

β. *Great woolly Illecebrum*.

Spikes solitary, on spreading branchlets.

γ. *With round leaves*. Retz. obs. 2. 13. n. 28. β.

Leaves ovate, somewhat hairy, spikes lateral, calyxes woolly.

5. *Illecebrum javanicum*. *Spear-leaved Illecebrum*.

Lin. syst. 248. Reich. 1. 581. Ait. hort. kew. 1. 289.]

Celosia lanata. Lin. spec. 298. syst. 247. Reich.

1. 579. Mill. dict. n. 6. nostr. n. 8.

[*Iresine javanica*. Burm. ind. 212. t. 65. f. 2.]

Amaranthus albus, &c. Pluk. phyt. t. 10. f. 1.

Leaves lanceolate, tomentose, spikes cylindrical, numerous, terminating.

6. *Illecebrum verticillatum*. *Whorl-flowered Illecebrum*, or *Knot-grass*.

Lin. spec. 298. Reich. 1. 581. hort. cliff. 492.

Huds. angl. 100. Wither. arr. 246. ed. 3. 267.

Fl. dan. t. 335. Krock. fles. n. 361.

Corrigiola. Dill. giff. 169. Raii syn. 160.

Paronychia serpyllifolia palustris. Vaill. par. t. 15. f. 7. Tourn. par. ed. angl. 2. 160.

Polygonum. serp. verticillatum. Raii syn. ed. 2. 160.

Pet. brit. t. 10. f. 7.—parvum fl. albo vertic. Baub.

hist. 3. 378. Raii hist. 214.

Polygala repens, Ger. 449. 1. emac. 563. Park. theat. 1333.—nivea. Baub. pin. 215.

Flowers in whorls, naked; stems procumbent.]

7. *Illecebrum suffruticosum*. *Shrubby Illecebrum* or *Knot-grass*.

Lin. spec. 298. Reich. 1. 581.

Paronychia hispanica fruticosa, myrti folio. Tourn. inst. 508. Mill. dict. vol. 2. n. 4.

Flowers lateral, solitary, stems suffruticose.

[8. *Ille-*

- [8. *Illecebrum cymosum*.
Lin. spec. 299. *yst.* 248. *Reich.* 1. 581. *Ger. prov.* 337. 3.
Polygonum capitulis ad genicula echinatis. Bocc. sic.
41. t. 20. f. 3. Raii hist. 214.
Spikes cymed, directed one way, stem diffused.
9. *Illecebrum aristatum*. Bearded *Illecebrum*.
Ait. hort. kew. 1. 290.
Flowers subs fascicled, leaves lanceolate, silky, awned.]
10. *Illecebrum Paronychia*. Mountain *Illecebrum* or Knot-grass.
Lin. spec. 299. *Reich.* 1. 582. *Ger. prov.* 337. 2.
I. ferpillifolium. Villars dauph. 2. 558?—an polygonifolium, *ejusd.* 557?
Herniaria. Lin. hort. cliff. 41. *ups.* 54.
Paronychia hispanica. Clus. hist. 2. 183.
Polygonum minus candicans. Baub. pin. 281.
P. montanum niveum. Park. theat. 445. 1.
Flowers fenced with shining bractes, stems procumbent, leaves even.
- [11. *Illecebrum divaricatum*. Forked *Illecebrum*.
Ait. hort. kew. 1. 291.
Flowers bracted, subs fascicled, peduncles dichotomous, panicled, leaves ovate-oblong, petioled.]
12. *Illecebrum capitatum*.
Lin. spec. 299. *Reich.* 1. 582. *Villars dauph.* 2. 558. *Ger. prov.* 337. 1.
Herniaria erecta. Sauv. monsp. 129.
Paronychia narbonensis erecta. Tournef. inst. 508.
Gärtd. 350.
Polygonum minus candicans, capitulis surrectis. Magn. monsp. 209.
P. montanum niveum minimum. Lob. ic. 420. *adv.* 179.
Flowers with shining bractes, hiding terminating heads, stems somewhat erect, leaves ciliate, villose underneath.
- [13. *Illecebrum benghalense*.
Lin. syst. 248. *Reich.* 1. 582. *mant.* 213.
Stem upright, herbaceous, leaves alternate and opposite, lanceolate, pubescent.]
14. *Illecebrum arabicum*.
Lin. syst. 249. *Reich.* 1. 582. *mant.* 51.
Corrigiola albella. Forsk. descr. 207. *n.* 31.
Flowers scattered, heaped, bractes shining, equalling them, stems procumbent.]
15. *Illecebrum Achyrantha*. Creeping *Illecebrum*.
Lin. spec. 299. *Reich.* 1. 583.
Achyranthes repens. Lin. spec. ed. 1. 205.
Achyrantha repens, fol. Bliti pallidi. Dill. elth. 8. *t.* 7. *f.* 7.
Stems creeping, hairy, leaves ovate, mucronate, one opposite, smaller, heads subglobular, somewhat spiny.
16. *Illecebrum polygonoides*.
Lin. syst. 249. *Reich.* 1. 583. *mant.* 345.
Gomphrena polygonoides. Lin. spec. ed. 1. 225.
Herniaria. Brown. jam. 184.
Amaranthoides. Herm. parad. t. 17. *Sloan. jam.* 1. 141. *t.* 86. *f.* 2. *Raii suppl.* 126.
β. Amaranthoides. Plum. ic. 94. *t.* 21. *f.* 2.
Stems creeping, rough-haired, leaves broad-lanceolate, petioled, heads orbiculate, naked.
- [17. *Illecebrum ficoideum*.
Lin. spec. 300. *yst.* 249. *Reich.* 1. 583. *Jacqu. amer. pict.* 43. *t.* 90.
Gomphrena ficoidea. Lin. syst. 1. 225. *Jacqu. amer.* 80. *t.* 60. *f.* 4.
Amaranthoides marina, &c. Plum. spec. 20.
Stems creeping, smooth, leaves broad-lanceolate, petioled, heads orbiculate, pubescent.]
18. *Illecebrum sessile*. Sessile-flowered *Illecebrum*.
Lin. spec. 300. *Reich.* 1. 584. *mant.* 345. *Vahl. symb.* 1. 22. *Lour. cochinch.* 162.
Gomphrena sessilis. Lin. spec. ed. 1. 225. *fl. zeyl.* *n.* 116.
Alternanthera. Forsk. descr. 28.
Amaranthus humilis. Burm. zeyl. 17. *t.* 4. *f.* 2.
Amaranthoides humile, &c. Pluk. phyt. *n.* 133. *f.* 1.
Olus squillarum. Rumph. amb. 6. 37. *t.* 15. *f.* 1.
Coluppa. Rheed. mal. 10. 21. *t.* 9.
Stems creeping, bisariously tomentose, leaves lanceolate, subsessile, heads oblong, smooth.]

19. *Illecebrum vermiculatum*.
Lin. spec. 300. *Reich.* 1. 584.
Gomphrena vermicularis. Lin. spec. 224. *Brown. jam.* 184. 2.
Caraxeron humile. Vaill. atl. par. 1722. 264.
Amaranthoides humile, &c. Herm. parad. t. 15.
Pluk. phyt. t. 75. *f.* 9. *Sloan. jam.* 1. 140.
Amaranthio affinis, &c. Brcyn. prodr. 2.
Trifolii spica Crithmum, marinum non spinosum bractilense. Raii hist. 1331.
Stems creeping, smooth, leaves subcylindric, fleshy, heads oblong, smooth, terminating.
- [20. *Illecebrum alnifolium*.
Lin. syst. 249. *Reich.* 1. 584. *mant.* 51.
Paronychia hispanica supina alnifolia, capitulis minoribus. Tournef. inst. 508.
Stems diffused, leaves ovate, flowers heaped, bractes shining.
21. *Illecebrum frutescens*.
L'Herit. stirp. nov. 4. 75. *t.* 37.
Stem shrubby, diffused, dichotomous, leaves opposite, mealy.
- DESCRIPTIONS, &c.
1. Stem naked, obscurely angular. Leaves petioled, lanceolate-ovate. Spikes several, small, villose, white, glomerate, from all the axils of the leaves and branches. It is an annual plant, and a native of the East Indies^a.
2. Stem usually prostrate, and very much branched. Spikes clustered, sessile, alternate, loose, tomentose. Calyx green, pubescent. Anthers yellow. Pistil purple. Leaves red on both sides, but the upper side darker. This is perennial, and native of the East Indies^b.
3. This is sufficiently distinguished from the other species by its woody arboreous stem, and its terminating dichotomous panicles. Found on the island of Teneriffe by Masson^c.
4. Stem rigid, somewhat hairy, branched only at the base. Leaves petioled, quite entire, sharpish, naked, pubescent underneath. Peduncles lateral, very short, in three or four sessile spikes, unequal to the leaflet. Stamens connected at the base by means of a five-toothed crown. Seed kidney-form^d.
- Loureiro adds, that the stem is round, and the branches diffused; the leaves lanceolate-ovate, subsessile, opposite; the spikes close, oblong, axillary; the calyx compressed and red; the capsule compressed; and the seed round-compressed, hooked.
- Native of the East Indies and Cochinchina, both in fields and gardens.—Cultivated in 1691, in the royal garden at Hampton Court. It is a biennial plant, and flowers most part of the year. It varies in size. The smaller one is described above. The great woolly *Illecebrum* has solitary, not aggregate spikes^e. Retzius mentions a remarkable variety with round leaves, in Malabar.
5. Leaves like those of *Mercurialis tomentosa*, obovate-lanceolate, white-tomentose underneath, ash-coloured above. Spikes approximating. Calyx hyaline, with a green keel. Germ globular. Stigmas two, red^f.
- Native of the East Indies, and cultivated in 1768 by Mr. Miller^g, whose description has been already given under *Celosia lanata*, which is the same plant with this, and is repeated here, because this seems to be its proper place. It is not easy, without more accurate notice than we sometimes possess, to ascertain whether a plant belongs to this genus, or *Celosia*, *Herniaria*, *Achyranthes*, or *Gomphrena*.
6. This little plant, which by our English writers is called Whorled Knot-grass, is only about three inches high. Stems filiform, branched, hirsute, with silvery hairs. Leaves opposite, oval, keeled, fleshy, smooth, quite entire, sessile, nearly of the same form and size with those of *Serpyllum* or wild Thyme. Flowers small, sitting in the axils of the leaves, white, shining, cartilaginous. Upper whorls crowded near together, by no means so far asunder as represented in *Flora Danica*^h. Native of many parts of Europe, in wet

^a Linn. mant.

^d Linn. syst.

^g Hort. kew.

^b Linn. syst.

^e Hort. kew.

^h Krock. Wither. Woodw. Mss.

^c Linn. suppl.

^f Linn. syst.

pastures. Ray observed it both in Flanders and Germany. He says it loves boggy places with *Nummularia rubra* and *Portulaca aquatica*. It was not known in his time to grow wild in England, except in the western part of Cornwall, about Pensance and elsewhere; but it has since been found not uncommonly in Devonshire. It flowers in July and August.]

7. This has woody stems about a foot high, with small leaves like those of Knot-grass. The flowers come out singly on the side of the stems, and make little appearance.

[Native of the South of Europe. Cultivated in 1739 by Mr. Miller. It flowers from May to August¹.

8. This has the appearance of *Sedum* and *Polygonum* (Knot-grass). Stem filiform, brachiate. Leaves in fours or thereabouts, linear, thickish. Flowers in spikes directed one way, the spikes composed of cymes both lateral and terminating. Calyxes coloured, vaulted at the tip, and awned^k.

It is more particularly described by Gerard. Root annual, simple, herbaceous, whitish. Stems procumbent, from two inches to half a palm in length, jointed, knotty, the joints more frequent at the base and top, round, with very short villose hairs. Leaves obovate, sessile; the lower ones in pairs opposite, broader and more obtuse, naked; the rest in fours or more, coming out together from the axils of two opposite leaves, narrower, sharper and subciliate. Bractes lanceolate, acute, membranaceous, diaphanous, fastened to the outer base of the leaves, and much shorter than they are. Flowers numerous, clustered, sessile, lateral, from the axils of the leaves. Calyx bell-shaped, herbaceous, coriaceous, swelling at the base, five-cleft; the segments continued to the very base, linear-subulate, ending in rigid, recurved bristles, at the bottom of the recurved part having an appendicle to each closing the mouth of the calyx. Filaments fastened to the base of the calyx, very short and slender. Germ roundish: style simple, very short. Seed roundish, compressed, with a diaphanous membrane drawn over it. Calyx permanent.

Native of the South of France, the Isle of Elbe and Portugal.

9. This is a biennial plant, native of the Canary islands, where it was found by Mr. Francis Masson. Introduced in 1780. It flowers in June and July¹.]

10. This has trailing stalks near two feet long, with leaves like those of the seventh sort; the heads of flowers come out from the joints of the stalk, having neat silvery bractes surrounding them, which make a pretty appearance. The flowers appear in June, and there is generally a succession of them for at least two months, and when the autumn proves warm, the seeds will ripen at the beginning of October.

[It differs from the next species in being perennial, in having longer creeping stems, and smaller heads of flowers^m.

Native of the South of Europe. Cultivated here in 1640, as appears from Parkinson.

11. Native of the Canary islands, where it was found by Masson. Introduced in 1779. It flowers in July and Augustⁿ.

12. This is an annual plant, according to Gerard, in which it differs from the tenth sort: but Villars says it is perennial. The stems are not so trailing as in that, and the leaves are ciliate, underneath villose. Native of Provence, Spain and the Levant^o.

Villars has three species of *Illecebrum*. The first he calls *polygonifolium* or Knot-grass leaved, and regards as a new species. He figures it in t. 16. and describes it thus. Root single, and pretty thick. Stems numerous, spreading on all sides, decumbent, and sometimes creeping; they are hard, round, smooth, and much branched. Leaves small, elliptic, in pairs, very smooth and even, with four lanceolate bractes white as snow, approaching to the same length with the leaf, but narrower and more pointed. Flowers from the upper axils of the leaves, alternate, from three to five in number, involved in similar bractes, but larger, and

still whiter. Flowers very small, and having only five fertile stamens (as in n. 8.) without any barren filaments. It rather resembles Knot-grass than the following species, which seem to be allied to *Herniaria*.

2. *I. serpillifolium*, which he makes synonymous with *I. Paronychia* of Linneus (n. 10.)

Stems trailing, very numerous, more simple; or less branched. Leaves round, small, little villose, green, but turning red towards the end of summer, manifestly ciliate, opposite, with very small membranaceous stipules at their base. Flowers in rounded or leafy parcels or heads, white as a snow-ball, at the ends of the stems and lateral branches: they have five fertile and five barren filaments, like the *Herniarias*.

3. *I. capitatum*, branching less than the two foregoing, and the little stems rising two or three inches. Leaves gray, erect, with dirty-gray stipules. Flowers all terminating. The five barren filaments have not been observed, but we may presume the flowers have them, from the near affinity between this and the preceding.

These three are all perennial, and natives of Dauphiné.

13. Root annual. Stem upright, subpubescent, not at all white, a foot or a foot and half in height. Leaves subsessile, broad-lanceolate, acuminate, pubescent, but green on both sides. Spikes small, hirsute, white, not only from all the axils of the leaves, but also at the top, where they are glomerate without leaves. Native of Bengal, Java, &c. in the East Indies^p.

14. This very much resembles *I. Paronychia* (n. 10.); but the flowers are not in terminating heads, but scattered and clustered all over the stem, with bractes not longer than the flowers. Stamens connected at the base by a five-toothed pitcher, the teeth placed between the filaments. Styles two. It has the leaves of *Paronychia*, but narrower. Found in Arabia by Forskahl^q.

15. Root annual. Stems from a foot to eighteen inches long, decumbent, round, jointed, and frequently putting out roots at the joints. Leaves opposite, very like those of *Blitum minus pallidum*, except that they are not sinuate at the end, but obtusely mucronate, and one of each pair is scarcely more than half the size of the other. From the axils of these leaves, sometimes both, sometimes only one, proceed heads of flowers, the whole length of the stem, but especially on the extreme branchlets; they are chaffy, prickly, and are composed of many pale juiceless scales, in which very minute and scarcely conspicuous flowers lie concealed. Seed naked, round, compressed, less smooth and shining than that of *Amaranthus*, at first pale green; but afterwards becoming brownish. About five scales or bractes belong to each flower.

Native of Buenos Ayres, whence specimens in seed were sent by Mr. Mylam, who was physician and surgeon to the South Sea Company there. From these seeds plants were raised in the Eltham garden, about the year 1732 or sooner, which flowered and perfected their seeds in October^r.

16. Stem round, villose all over, dichotomous, which is not the case in the two next species. Leaves opposite, quite entire, even, but not smooth, very much veined, acute, ending at the base in petioles the length of the leaf, and somewhat hairy. Flowers axillary, white, and under them a three-leaved bracte, shorter than the flower. Filaments simple, shorter than the corolla. Germ compressed^s. It resembles the next species very much, but it is the stem in this, and not the flower, that is villose.

Native of America, on sea shores. Browne says, that this little plant is found creeping in all the low lands, and dry savannas about Kingston in Jamaica; that it generally grows in tufts, and spreads about six or eight inches from the root. He calls it hairy Rupture-wort, supposing it to be a *Herniaria*.

17. This plant puts out roots at every joint. Leaves wedge-form-lanceolate, acute, sessile. Heads of flowers roundish, sessile, numerous. Calyx (bracte) three-

¹ Hort. kew.

^m Gerard.

^k Linn. spec.

ⁿ Hort. kew.

¹ Hort. kew.

^o Linn.

^p Linn. mant.

^q Ibid.

^r Linn. mant.

^s Dillenius.

leaved, dry, permanent; outer leaflet ovate, acuminate, concave, erect, the two side ones awl-shaped, sickled, acute, erect. Corolla (calyx), leaflets upright, dry, double the length of the bracte; the two outer lanceolate-ovate, concave, the three inner lanceolate, convex, the middle one broadest. Filaments awl-shaped, upright, the length of the germ, which is roundish and compressed; style extremely short, single; stigma obtuse, villose. Capsule cordate-orbicular, compressed, crowned with the style and stigma. Seed orbicular, compressed¹.

The corolla, to sharp-sighted persons, is pubescent. The nectary has five rays, jagged at the tip².

Native of America on the coast; now wild in Spain. Jacquin says, it is so abundant in Martinico in meadows, as to be a noxious weed.

18. Stem procumbent, rooting, purple, bifariouly two-edged with a villose line, as in *Veronica Chamædrys*. The young leaves are ferrate, but scarcely apparently so when adult³.

Stems herbaceous, diffused, short, as it were four-cornered, jointed, frequently creeping. Leaves subserrate, sessile, smooth, opposite. Flowers white, in roundish axillary heads, often two together⁴.

Native of the East Indies, and in wet places about Canton in China.—It is an annual plant, and was introduced in 1778 by Mons. Thouin. It flowers from July to October⁵.

Forstahl found six stamens in his *Alternanthera*, but Vahl remarked only five in the dried specimens, and since it agrees with this plant both in the herb and fructification, he doubts not of their being the same.

19. This creeping plant spreads a great way among the grass. The stem is pretty slender, and throws out a few fibrous roots at every joint. The whole plant has a reddish brown cast; and something the appearance of Purslane⁶.

Native of Brasil and Curaçao. Very common about rock-river in Jamaica⁷. Sandy shores of South America⁸.

Swartz places it among the *Gomphrenas*, on account of its having commonly two styles, a two or three-leaved calyx, with a nectary and lanugo between the calyx and corolla; all indicating an affinity between this and *G. globosa*.—See *Gomphrena vermicularis*.

20. Native of Spain.

21. Root woody, branched, gray. The whole plant is mealy and prostrate. Stem branched, round, ash-coloured; branches alternate, flexuose, purple at the joints. Leaves oval or roundish, blunt, minutely and scarce apparently acuminate, somewhat nerved, ash-coloured underneath, spreading and finally hanging down, one inch long, and eight lines wide. Petioles scarcely any, edged by the leaf running along it. Spikes solitary, axillary, sessile whilst flowering, but peduncled whilst fruiting; ovate, imbricate, three lines long. Flowers crowded very close, imbricate, sessile, of an herbaceous colour, two lines long. Calyx double: outer three-leaved, inner five-leaved, twice as long. Nectary a sheath inserted into the receptacle, five-parted, pellucid, concealing the germ. The calyx and nectary remaining, forming with the seed an ovate, imbricate spike. Seed roundish, compressed, rufous, glossy. It flowers and ripens its seeds in summer.

This plant has a double calyx as in *Achyranthes*, and some species of *Illecebrum*. It has no stipules, as in *Achyranthes*, and some species of *Illecebrum*. But it has the herb rather of this genus⁹.]

PROPAGATION AND CULTURE.

7, 8, 10, 12. These, which are natives of the South of Europe, may be propagated by seeds sown on a bed of light earth the beginning of April. The plants will come up in May, when they should be kept clean from weeds till the plants are fit to remove, when they should be carefully taken up, planting some of each sort in small pots, and the other in a warm dry border, observing to water and shade them until they have taken new root; after which, those that are planted

in the full ground will require no other culture but to keep them clean from weeds; for in the ordinary winters of England they will live in the open air; but as these plants are sometimes killed in severe winters, some should be set in pots, to be placed in a common frame, where they may enjoy the open air in mild weather, but be screened from frost.

But as the seeds do not constantly ripen, they may also be increased by cuttings; which, if carefully taken off in May or June, and planted in a shady border, will in two months put out roots: in moist weather they may be transplanted, and afterwards treated as the old plants.

4, &c. The rest, being natives of the East or West Indies, and other hot climates, are tender, and will not thrive in the open air in England; their seeds therefore must be sown on a hot-bed in the spring, with *Amaranthus*, *Gomphrena*, and other tender plants: afterwards, if they are plunged into the tan-bed in the stove, their branches will put out roots, whereby they may be propagated in plenty. Where seeds cannot be obtained, they may be increased this way; and the perennial sorts by cuttings.

[ILLICIUM. (*Ab illiciendo*; an incitement or allurement. An enticing plant.)

Lin. gen. n. 611. Reich. 746. Schreb. 940. mant.

167. Ellis in philos. trans. for 1770. t. 12.

Gartn. t. 69. Juss. 280.

Class. 13. 7. Polyandria Polygynia.

Nat. order of *Coadunatae*.—*Magnoliæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth six-leaved, deciduous, the three inferior leaflets oval; the three superior alternate ones narrower, and resembling petals.

COR. Petals many (twenty-seven), disposed in a triple series: the nine inferior obtuse, concave, the nine middle shorter and narrower; the interior nine still shorter and narrower.

STAM. Filaments very many (thirty), short, depressed. Anthers upright, oblong, obtuse, emarginate.

PIST. Germs very many (twenty) disposed in a circle, ending in very short spreading styles. Stigmas at the upper side of the style, oblong.

PER. Capsules several, (commonly eight, *Lour.*) ovate, compressed, hard, spreading into a circle, bivalve, (one-valved, *L.* opening at the upper edge. *G.*)

SEED solitary, ovate, rather compressed, glossy.

ESSENTIAL CHARACTER.

Cal. six-leaved. Pet. twenty-seven. Caps. several, disposed in a circle, bivalve, one-seeded.

SPECIES.

1. *Illicium anisatum*. Yellow-flowered Aniseed-Tree.

Lin. spec. 664. syst. 507. Reich. 2. 624. mat. med.

140. 510. Gartn. fruct. 1. 338. *Lour. cochinch.*

353. *Thunb. jap.* 235. *Berg. mat. med.* 514.

Zingi fructus stellatus f. *Anisum indicum*. *Baub. hist.* 1. 485.

Somo vulgo Skimmi. *Kampf. amoen.* 380. t. 881.

Flowers yellow.

2. *Illicium floridanum*. Red-flowered Aniseed-Tree.

Lin. syst. 507. Reich. 2. 624. mant. 395. Ellis

in philos. trans. 1770. vol. 60. p. 524. t. 12.

Gartn. fruct. 1. 339. Hort. Kewens. 2. p. 250.

Flowers red.

DESCRIPTIONS, &c.

1. Stem arboreous, a fathom or more (eight feet, *Lour.*) in height, smooth all over. Branches trichotomous, wrinkled and angular, from spreading upright. Leaves aggregate, in threes or fours, elliptic (turbinata-ovate, *L.*) broader near the tip, acuminate, blunt, *L.* quite entire, evergreen, paler underneath, often reflex, two inches long. Petiole very short, channelled, gradually widening into the leaf. Flowers axillary, peduncled, solitary^a. Germs eight or more^b. Capsules six or eight, ovate-lanceolate, compressed a little, horizontal, of a substance like cork, rugged without, smooth and even within, having a strong smell of Anise when rubbed. Seeds elliptic, subtruncated in front, lens-shaped, extremely smooth and even, glossy, rufous or cinnamon-coloured^c.

^a Thunberg.

^b Loureiro.

^c Gartner.

The

¹ Jacquin.

² Linn. mant.

³ Ibid.

⁴ Loureiro.

⁵ Hort. kew.

⁶ Browne.

⁷ Swartz.

⁸ L'Heritier.

The whole plant, but especially the fruit, has a pleasant aromatic smell, and a sweetish subacid taste. It is stomachic and carminative, and is used in the eastern countries in the cholic, rheumatism, &c. In China it is in frequent use for seasoning dishes, especially such as are sweet^d.

In Japan they place bundles and garlands of the Aniseed-tree in their temples before their idols, and on the tombs of their friends. They also use the powdered bark as incense to their idols. A branch put into the decoction of *Tetraodon hispidum* is supposed to increase the virulence of the poison. The bark finely powdered is used by the public watchmen to make a chronometer or instrument for measuring the hours, by slowly sparkling at certain spaces in a box, in order to direct when the public bells are to sound^e.

Native of China and Japan. Thunberg doubts whether this and the floridanum be really distinct species, or only varieties.

2. Stem arboreous; general appearance nearly as in the preceding species: flowers deep red; capsules considerably more numerous than in the former: viz. twelve or more^f: petals from twenty to twenty-seven. Leaves, &c. extremely fragrant, as in the preceding. Native of Florida.

PROPAGATION AND CULTURE.

The Aniseed Tree may be propagated by seeds, if they can be procured; or by laying down the young branches; or by cuttings, which strike freely. It requires the same treatment as *Gardenia*.

ILU-MULLU. See *Spinifex*.

ILY. See *Arundo Bambos*.]

IMMORTAL FLOWER. See *Gnaphalium*.

IMPATIENS. (*Impatient of the touch*. So named from the elasticity of the fruit.)

Lin. gen. n. 1008. Reich. 1093. Schreb. 1365.

Riv. tetr. 121. Balsamina. Tournef. 235. Juss. 270.

Class. 19. 6. Syngenesia Monogamia.

Nat. order of *Corydalis*.—*Gerania*, Juss.

GENERIC CHARACTER.

CAL. Perianth two-leaved, very small: leaflets roundish-acuminate, equal, placed towards the sides of the flower, coloured, deciduous.

COR. five-petalled, ringent. Petals unequal; of which the superior is roundish, flat, upright, slightly trifid; constituting the upper lip.

Lower pair reflex, very large, outwardly larger, obtuse, irregular, constituting the lower lip.

Intermediate pair opposite, rising from the base of the upper petal.

Nectary one-leaved, receiving in the manner of a hood the base of the flower; oblique at the mouth, rising outwardly, ending in a horn at the base.

STAM. Filaments five, very short, narrower towards the base, incurved. Anthers as many, connate, divided at the base.

PIST. Germ superior, ovate-acuminate. Style none. Stigma simple, shorter than the anthers.

PER. Capsule one-celled, five-valved, springing open elastically, the valves rolling spirally.

SEEDS several, roundish, fixed to a columnar receptacle.

Obs. In some species the middle petals are wanting, and in some the horn of the nectary. The capsule differs in figure: hence Rivinus's *Impatiens* had a long capsule, and his *Balsamine* an ovate one.

ESSENTIAL CHARACTER.

Cal. two-leaved. Cor. five-petalled, irregular, with a cowl'd nectary. Caps. superior, five-valved.

SPECIES.

* With one-flowered peduncles.

[1. *Impatiens chinensis*.

Lin. spec. 1328. Reich. 3. 971. Lour. cochinch. 511. Burm. ind. 187.

Peduncles one-flowered, solitary, leaves opposite, ovate, nectaries bowed.

2. *Impatiens latifolia*.

Lin. spec. 1328. Reich. 3. 971.

^d Loureiro.

^e Thunberg.

^f *Subviginticapularis*. Gärtn.

Valli-onapu. Rheed. mal. 9. 91. t. 48.

Peduncles one-flowered, solitary, leaves ovate, serratures lanceolate, nectaries longer than the flower.

3. *Impatiens rosmarinifolia*.

Retz. obs. 5. 29. t. 79.

Peduncles one-flowered, solitary, leaves opposite, linear.

4. *Impatiens capensis*.

Thunb. prodr. cap. 41.

Peduncles one-flowered, solitary, leaves ovate, notches piliferous.

5. *Impatiens bifida*.

Thunb. prodr. cap. 41.

Peduncles one-flowered, solitary, leaves oblong, serrate, nectaries very long, bifid.

6. *Impatiens oppositifolia*.

Lin. spec. 1328. Reich. 3. 971. fl. zeyl. n. 314.

Kondam-pallu. Rheed. mal. 9. 57. t. 31?

Peduncles one-flowered, aggregate, leaves opposite, linear.

7. *Impatiens cornuta*.

Lin. spec. 1328. Reich. 3. 971. fl. zeyl. n. 316.

Lour. cochinch. 511. Burm. zeyl. 41. t. 16. f. 1.

(*Balsamina latifolia*.)

Peduncles one-flowered, aggregate, leaves lanceolate, nectaries longer than the flower.]

8. *Impatiens Balsamina*. Garden Balsam.

Lin. spec. 1328. Reich. 3. 971. hort. cliff. 428.

upf. 276. Lour. cochinch. 512. Thunb. jap. 327.

Mill. fig. t. 59. Blackw. t. 583.

Balsamina. Dod. pempt. 671.

B. femina. Bauh. pin. 306. Ger. 290. f. 2. emac. 362. f. 2. Park. theat. 715. f. 2. parad. t. 279. f. 8.

Lacca herba. Rumph. amb. 5. 274. t. 90.

Tilo-onapu f. Nolengu. Rheed. mal. 9. 101. t. 52.

Peduncles one-flowered, aggregate, leaves lanceolate, the upper ones alternate, nectaries shorter than the flower.

[9. *Impatiens mutila*.

Lour. cochinch. 512.

Peduncles one-flowered, leaves lanceolate, serrate, opposite, nectaries mutilated.

10. *Impatiens cochleata*.

Lour. cochinch. 512.

Peduncles one-flowered, leaves oblong, subserrate, opposite, nectaries spiral, root creeping.]

* * With many-flowered peduncles.

11. *Impatiens triflora*.

Lin. spec. 1329. Reich. 3. 972. fl. zeyl. n. 315.

Balsamina angustifolia, &c. Burm. zeyl. 41. t. 16. f. 2.

B. erecta, &c. Herm. par. t. 105.

Peduncles three-flowered, solitary, leaves narrow-lanceolate.

12. *Impatiens Noli tangere*. Common Yellow Balsam.

Lin. spec. 1329. Reich. 3. 972. fl. suec. n. 792.

hort. cliff. 428. Hudf. angl. 380. Wither. arr.

961. ed. 3. 263. Hall. helv. n. 557. Pollich.

pal. n. 848. Leers herb. n. 686. Fl. dan.

t. 582. Villars dauph. 2. 669. Krock. fles. n.

1494. Rivin. tetr. t. 122. Dod. pempt. 659. 2.

Balsamina Noli tangere. Scop. carn. n. 1101.

B. lutea, f. Noli me tangere. Bauh. pin. 306. Raii syn. 316.

Noli me tangere. Bauh. hist. 2. 908. Col. ecphr. 1. 149. t. 150.

Perficaria filiquosa. Ger. 361. f. 3. emac. 446. 4.

Raii hist. 1328. Petiv. brit. t. 36. f. 1.

Mercurialis sylvestris, Noli me tangere dicta, f. Perf. sil. Park. theat. 296. 5.

Peduncles many-flowered, solitary, leaves ovate, joints of the stem swelling.

DESCRIPTIONS, &c.

[These are herbaceous plants, with alternate, or sometimes, but rarely, opposite leaves, without any stipules. Peduncles axillary, one-flowered or many-flowered^a. Linneus divides the species into two sections, from this last circumstance; but Loureiro does not find, in any of the species which he examined, that the peduncles were always solitary, or always aggregate.

^a Jussieu.

1. This

1. This is an annual plant, one foot high, upright, round, alternately branched, red. Leaves sessile, smooth, subserrate, or serrate-toothletted. Peduncles longer than the leaf, generally solitary. Flowers red-purple. Spur of the nectary awl-shaped, thick, very much bowed. Native of China^b.

2. This also is an annual plant. Leaves lanceolate, crenate, with a prominent dagger point from each notch. Peduncles nearly the length of the leaves. Flowers the same size as in I. *Balsamina* (n. 8.); but the spur awl-shaped, almost the length of the peduncle. Native of the East Indies^c.

3. Leaves glaucous underneath. Peduncles alternate. Nectary larger than the petals. In other circumstances it agrees with I. *oppositifolia*, from which however it appears to be different. Koenig sent it from Ceylon^d.

4, 5. Natives of the Cape of Good Hope^e.

6. This is an upright plant, with a succulent jointed stem. Leaves sessile, smooth, serrate-toothed. Branches single from each alternate axil. Peduncles filiform, naked, commonly three from each axil, longer than the internodes. Flowers small, with a nectary much shorter than the petals. Native of the island of Ceylon^f. Annual.

7. This is also an annual plant. Stem a foot high, roundish, diffused. Leaves serrate, hispid, petioled, large, dusky green, sweet-smelling. Flowers purple or white. Peduncles few, long. Spur three times as long as the petals, somewhat bowed. Capsule ovate, acuminate, hispid^g.

In its leafing this resembles the next species, but the flowers are much smaller, with spurs five times longer, and on very long peduncles. In Burman's figure, the peduncles are some solitary, others two, and others three together. The engraver, by mistake, has placed some of them below the leaf. The Ceylones call it *Kudaelu-kola*, from *Kudaelu* a swallow, and *Kola* a leaf^h.

Native not only of Ceylon, but of Cochinchina, where the inhabitants use a decoction of the leaves as a wash to their head and hair, to which this plant, which is a common weed in their gardens, gives a very sweet odour.]

8. Garden Balsamine or Balsam, is an annual plant, rising a foot and half high, and dividing into many succulent branches. Leaves long, serrate. The flowers come out from the joints of the stem, upon slender peduncles about an inch long, each sustaining a single flower; but there are two, three or four of these peduncles arising from the same joint.

[In its wild state, it is about two feet high, with an upright, round, hispid, juicy, white stem, and ascending branches. Leaves alternate, serrate, smooth, petioled. Peduncles long, subaggregate. Flowers red or white. Capsule ovate-oblong, lanuginousⁱ.

Native of the East Indies, China, Cochinchina, and Japan; the Japonese use the juice prepared with alum, for dying their nails red^k. It was cultivated by Gerard in 1596^l.

By culture this plant is very much enlarged, and becomes very branching. I have seen the stem seven inches in circuit, and all the parts large in proportion, branched from top to bottom, loaded with its party-coloured flowers, and thus forming a most beautiful bush. The varieties which cultivation has produced in this elegant flower are numerous.] White, purple, red, striped and variegated of these different colours, single and double of each. Mr. Miller speaks particularly of two varieties, which perhaps may belong to some of the other species. First, the Immortal Eagle, a most beautiful plant from the East Indies. The flowers double, much larger than those of the common sort, scarlet and white, or purple and white; and there being many of these, the plant is very valuable. Secondly, the Cockspur from the West Indies; which has single flowers, as large as the other, but never

more than half double, but only with red and white stripes. This is apt to grow to a very large size before it flowers, which is very late in autumn, so that in bad seasons there will be scarcely any flowers, and the seeds seldom ripen.

[9. Stem annual, a foot and half high, upright, round, with ascending branches. Leaves smooth. Flowers scarlet, on one-flowered, subsolitary peduncles. Cultivated in Cochinchina, probably from China.

10. Stem annual, a foot high, upright, jointed, red, almost without branches. Leaves blunt, small, smooth, thick, sessile. Peduncles long, subsolitary. Nectary large, compressed, rolled into a spiral. Flowers scarlet, very handsome, but not sweet. Capsule fleshy. Cultivated in China^m.

11. Stem upright, jointed. Leaves smooth, acuminate, serrate, ending in the petioles. Peduncles dividing into three, or more rarely two equal pedicels, from the same point, like the umbellate plants, with an involucre of the same number of lanceolate deciduous leaves. Flowers large, with the horn of the nectary blunt, curved inwards, thick, scarcely the length of the flower. Burman says it is very long, and has so represented it in his figure. Native of Ceylonⁿ:] Mr. Miller adds, and of many parts of India, but that the flowers being smaller than those of the common sort, this is not worth cultivating for beauty. [Burman however says, that they are large and very elegant.

12. Root annual. Stem a foot high, upright. Stem and branches pale yellowish green, smooth and shining, somewhat transparent, thickest at the joints, succulent and brittle. Branches sometimes opposite. Lower leaves ovate, uppermost elliptical or lanceolate, irregularly serrate, all smooth, petioled. Upper part of the stem flexuose, forming an obtuse angle opposite to each leaf. Some of the branchings of the peduncles have bractes, and some not^o. Flowers yellow; the lateral petals spotted with red, by cultivation changing to pale yellow or purplish^p; these are blunt, slightly two-lobed, with an oval appendix at the base, about an inch in length, and above half an inch in breadth: the uppermost petal is roundish or elliptic, emarginate, blunt, quite entire, three lines and a half long, and five lines broad: the lowermost is tubular, round, gradually narrowing into a spur, reflex at the base, retuse at the top, at bottom ovate, acuminate, an inch long, and half an inch wide, with scattered purple dots on the inside. Filaments fleshy, connected round the germ, thickening at top. Germ linear, striated. Style short, ovate, yellow. Stigma bluntish, yellow. Capsule an inch or more long, bellying at intervals. Seeds rather large, angular, striated, ovate^q.

When the seeds are ripe, upon touching the capsule, they are thrown out with considerable force. Hence the latin names of *Impatiens* and *Noli tangere*, and the English names of *Quick in hand* (alive as it were in the hand) Gerard calls it *Coddled Arsmart*, and Parkinson, Wild Mercury. *Touch me not*. The elasticity of the seed-vessel has furnished names in most of the European languages. In German it is called *Springsame*, *Springkraut*, &c. In Swedish, *Springkorn*. In Danish, *Springkorn* or *Springurt*. In French, *Impatiente*, *ne me touchez pas*; and also *Balsamine jaune*. In Italian, *Erba impaziente*, *Balsamina gialla*. In Spanish, *No quieras tocarme*, *Balsamina amarilla*. In Portuguese, *Melindre nao me toques*.

In the day-time the leaves are expanded, but at night they hang pendant, contrary to what is observed in most plants which from a deficiency of moisture, or a too great perspiration from heat, commonly droop their leaves during the day^r.

The whole plant is considerably acrid, and no quadruped, except perhaps the goat, is said to eat it. Notwithstanding this, it was formerly considered as diuretic and vulnerary, and was given to relieve the hæmorrhoids and the strangury. Boerhaave regarded it as poisonous. It is now consigned wholly to the flower-garden, where however it is not often seen.

^b Linn. and Loureiro.

^c Linn. spec.

^d Retzius.

^e Thunberg.

^f Linn. zeyl.

^g Loureiro.

^h Burm. zeyl.

ⁱ Loureiro.

^k Thunberg.

^l Hort. kew.

^m Loureiro.

ⁿ Linn. zeyl.

^o Woodw. Mfs.

^p Withering.

^q Pollich.

^r Linn. Villars.

It is the only species of *Impatiens* wild in Europe. It is also found in Canada. With us it occurs in Wales, and the northern counties of England, in moist shady places, and by the banks of rivulets: as on the banks of Winander mere near Ambleside, near Rydall Hall, and between both places, in Westmoreland; in Satterthwait parish, and by the side of Conistone Lake in Lancashire. About Bingley in Yorkshire. Flowering in July and August.]

PROPAGATION AND CULTURE.

The seeds of these plants should be sown on a moderate hot-bed in the spring, and when the plants are come up about an inch high, they should be transplanted on another moderate hot-bed at about four inches distance each way, observing to shade them from the sun till they have taken new root; after which they should have a large share of free air admitted to them, at all times when the weather is favourable, to prevent their drawing up tall and weak: they will require to be often refreshed with water, but it should not be given to them in too great plenty; for as their stems are very succulent, they are apt to rot with much moisture. When the plants are grown so large as to touch each other, they should be carefully taken up with balls of earth to their roots, and each planted into a separate pot filled with light rich earth, and plunged into a very moderate hot-bed under a deep frame, to admit the plants to grow, shading them from the sun until they have taken fresh root; then they should have a large share of air admitted to them every day, and by degrees hardened, so as to bear the open air, into which part of the plants may be removed in July, placing them in a warm situation; where, if the season proves favourable, they will flower and make a fine appearance; but it will be proper to keep part of the plants either in a glass case or a deep frame, in order to get good seeds, because those in the open air will not ripen their seeds until the summer proves very warm; and the plants in shelter must have a good share of free air every day, otherwise they will grow pale and sickly; nor should they have too much of the sun in the middle of the day, in very hot weather, for that occasions their leaves hanging, and their requiring water, which is often very hurtful; therefore if the glasses are shaded in the middle of the day for three or four hours, the plants will thrive better, and continue longer in beauty than when they are exposed to the great heat. Those who are curious to preserve these plants in perfection, pull off all the single and plain coloured flowers from the plants which they preserve for seeds, leaving only those flowers which are double, and of good colours; where this is carefully done, they may be continued without the least degeneracy constantly.

The common single sort will spring in the open ground, and where the seeds scatter, they will come up the following spring. But such self-sown plants do not come to flower so early as those which are raised upon a hot-bed; they will continue, however, later in the autumn. But to have good flowers, the plants must be raised in a hot-bed.

[Gerarde directs the seeds to be sown at the beginning of April in a bed of hot horse-dung, even as Musk Melons, Cucumbers, &c. and replanted abroad from the said bed, into the most hot and fertile place of the garden, at such time as they have gotten three leaves apiece.

Parkinson says, it is a very tender plant, and must be sown carefully in a pot of earth, and tended and watered in the heat of summer, and all little enough to bring it to perfection. In his time (1629) its native place was not known here, and the seeds were imported from Italy.

12. The other sorts may be treated in the manner above directed, being annual plants from the same countries;] but if the seeds of the common European sort be permitted to scatter, they generally succeed better than when they are sown; for unless they are sown in the autumn soon after they are ripe, they rarely grow. The plants require no care but to keep them clean from weeds, and thin them where they are too close. It delights in a shady situation and moist soil.

IMPERATORIA. (So named from its supposed imperial virtues in medicine.)

Lin. gen. n. 359. Reich. 389. Schreb. 491.

Gertn. t. 21. Juss. 220.

Class. 5. 2. Pentandria Digynia.

Nat. order of Umbellatae or Umbelliferae.

GENERIC CHARACTER.

CAL. Umbel universal flat-spreading; partial unequal. Involucre universal none: partial very slender, with one or two leaflets, almost the length of the umbel. Perianth proper obscure.

COR. Universal uniform; floscules all fertile. Proper of five petals, inflex-emarginate, nearly equal.

STAM. Filaments five, capillary. Anthers roundish.

PIST. Germ inferior. Styles two, reflex. Stigmas obtuse.

PER. none. Fruit roundish, compressed, gibbose in the middle, margined, bipartite.

SEEDS two, ovate, marked on one side with two furrows, surrounded by a broad margin.

ESSENTIAL CHARACTER.

Fruit roundish, compressed, gibbose in the middle, surrounded by a margin. Pet. inflex-emarginate.

SPECIES.

1. *Imperatoria Ostruthium*. Masterwort.

Lin. spec. 371. Reich. 1. 712. hort. cliff. 103. ups.

65. mat. med. 84. Woodv. med. bot. 102. t. 35.

Plenck. ic. t. 11. Gertn. fruct. 1. 90. Hudf. angl.

649. Lightf. scot. 168. Wither. arr. ed. 3. 308.

Hall. herb. n. 805. Scop. carn. n. 328. Villars

dauph. 2. 628. Krock. files. n. 456.

Imperatoria. Camer. epit. 532. Fusch. 763. Matth.

775. Trag. 433. Lonic. 1. 228. 2. Dod. 320. 1.

Lob. obs. 398. 1. ic. 700. 1. Baub. hist. 3. 2. 137.

Raii hist. 436. Rivin. pent. t. 7. Blackw. t. 279.

Ger. emac. 1001. f. 1. Garid. aix. 55.

I. major. Baub. pin. 156. Mor. hist. f. 9. t. 4. f. 1.

I. f. *Astrantia vulgaris*. Park. theat. 942.

Astrantia. Clus. hist. 2. 194. 2.

Magistrantia. Camer. epit. 592.

Selinum Imperatoria. Crantz. austr. 174. umb. 61.

Allion. pedem. n. 1299.

DESCRIPTION, &c.

The root is as thick as a man's thumb, running obliquely in the ground; it is fleshy, aromatic, and has a strong acrid taste, biting the tongue and mouth like Pellitory of Spain; the leaves arise immediately from the root; they have foot-stalks seven or eight inches long, dividing into three very short ones at the top, each sustaining a trilobate leaf, indented on the border; the foot-stalks are deeply channelled, and when broken emit a rank odour. The flower-stalks rise about two feet high, and divide into two or three branches, each being terminated by a pretty large umbel of white flowers, whose petals are split; these are succeeded by oval compressed seeds, somewhat like those of Dill, but larger. It flowers in June, and the seeds ripen in August.

[Linneus observes, that the floral leaves are opposite, and that there is a petiolar, membranaceous, ventricose stipule one within another.

The leaves, according to Lightfoot, have about five pinnae, the extreme one always divided into three lobes, and all sharply ferrate.

Fruit elliptic, emarginate at top and bottom, membranaceous-winged. Seeds compressed, surrounded at the sides with a very broad rim, and marked on the back with three white, acute-angled ribs, not winged; the ventral part is flat, painted with two brown bowed fillets.

Native of many parts of the Alps, Austria, Styria, Tyrol, Silesia, Dauphiné; observed by Ray above the Grand Chartreuse, and found by Mr. Lightfoot in Scotland, upon the banks of the Clyde in several places, particularly about Ardencaple; and in the isle of Bute, near Mount Stewart.

The root is warm and aromatic; a sudorific, diuretic and sialagogue: recommended in dropsy, and debilities of the stomach and bowels; an infusion of it in wine is said to have cured quartans that have resisted the bark. When chewed it excites a copious flow of

saliva, with a warm and not disagreeable sensation in the gums, and frequently cures the rheumatic tooth-ache^b.]

PROPAGATION AND CULTURE.

This plant is cultivated in gardens to supply the markets. It may be propagated either by seeds, or by parting the roots: if you would propagate it by seeds, they should be sown in autumn soon after they are ripe, on a bed or border, in a shady situation; observing not to sow the seeds too thick, nor should they be covered too deep. In the spring the plants will appear, when they should be carefully weeded; and if the season should prove very dry, they should be now and then refreshed with water, which will greatly promote their growth. Toward the beginning of may, if you find the plants come up too close together, you should prepare a moist shady border, and thin the plants carefully, leaving them about six inches asunder: and plant those which you draw up into the border about the same distance apart every way, being careful to water them duly, if the season should prove dry, until they have taken root; after which time these plants (as also those remaining in the seed-beds) will require no other culture but to keep them clear from weeds; which may be easily effected, by hoeing the ground between the plants now and then in dry weather; and stirring the ground will be of great service to the plants. The following autumn these plants should be transplanted where they are designed to remain, which should be in a rich moist soil and a shady situation, where they will thrive much better than if too much exposed to the sun, or in a dry soil, where they will require a constant supply of water in dry weather. These plants must not be less than two feet distant every way. When they are rooted they require only to be kept clear from weeds; and in the spring, before they shoot, to have the ground gently dug between them, so as not to cut or bruise the roots. With this management they will continue several years, and produce seeds in plenty.

If you would propagate this plant by offsets, the roots should be parted at Michaelmas, and planted in a shady situation, at the same distance as has been directed for the seedling plants, observing to water them until they have taken root, after which they must be managed as the seedlings.

[IMPERATORIA. See *Adonis*.]

INARCHING is a method of grafting, which is commonly called grafting by approach. This method is used when the stock intended to graft on, and the tree from which the graft is to be taken stand so near, or can be brought so near, that they may be joined together. The manner of performing it is this: take the branch you would inarch, and having fitted it to that part of the stock where you intend to join it, pare away the rind and wood on one side about three inches in length. After the same manner cut the stock or branch in the place where the graft is to be united, so that the rind of both may join equally together, at least on one side, that the sap may meet; then cut a little tongue upwards in the graft, and make a notch or slit in the stock downwards to admit it; so that when they are joined, the tongues will prevent their slipping, and the graft will more closely unite with the stock. Having thus placed them exactly together, tie them with bafs or other soft bandage, then cover the place with grafting clay, to prevent the air from drying the wound, or the wet from rotting the stock. Fix a stake in the ground, to which the stock or branch and graft should be fastened to prevent the wind from separating them.

In this manner they are to remain about four months, in which time they will be sufficiently united, and the graft may then be cut from the parent tree, observing to slope it off close to the stock; and if at this time the joined parts be covered with fresh grafting clay, it will be of great service to the graft.

This operation is always performed in april or may, that the graft may unite with the stock before the succeeding winter, and is commonly practised upon Oranges, Myrtles, Jasmines, Walnuts, Firs, Pines, and several other trees, which will not succeed so well by

^b Wither. and Stokes.

common grafting or budding. But although I have mentioned Orange trees, yet I would by no means advise this practise where the trees are designed to grow large; which, by this method, they rarely ever will do; and it is chiefly practised on Oranges as a curiosity, to have a young plant with fruit upon it, in a year or two from seed, by inarching a bearing branch into a young stock; but these plants are seldom long-lived.

[INDIAN ARROW-ROOT. See *Maranta*.]

INDIAN CORN. See *Zea*.

INDIAN CRESS. See *Tropaeolum*.

INDIAN FIG. See *Cactus*.

INDIAN GOD TREE. See *Ficus*.

INDIAN MALLOW. See *Sida*.

INDIAN MILLET. See *Holcus*.

INDIAN OAK. See *Teetona*.

INDIAN REED. See *Canna*.

INDIAN SHOT. See *Canna*.

INDICUM and INDIGO. See *Indigofera*.

INDIGO, BASTARD. See *Amorpha*.]

INDIGOFERA. (*Bearing or yielding the blue dye called Indigo; or Indicum; from its native country India.*)

Lin. gen. n. 889. Reich. 962. Schreb. 1205.

Gartn. t. 148. Juss. 359.—Indigo. *Isn. in mem.*

acad. par. 21001

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceae* or *Leguminosae*.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, spreading, nearly flat, five-toothed.

COR. papilionaceous. *Standard* rounded, reflex, emarginate, spreading.

Wings oblong, obtuse, spreading at the inferior margin of the shape of the standard.

Keel obtuse, spreading, deflex, marked on each side by an awl-shaped hollow dagger or point.

STAM. *Filaments* diadelphous, disposed in a cylinder, ascending at their tips. *Anthers* roundish.

PIST. *Germ* cylindric. *Style* short, ascending. *Stigma* obtuse.

PER. *Legume* roundish, long: (linear-oblong, commonly four-cornered. G.)

SEEDS some, kidney-shaped; (kidney-retuse or cuboid. G.)

ESSENTIAL CHARACTER.

Cal. spreading. *Keel* of the corolla with an awl-shaped spreading spur on each side. *Legume* linear.

SPECIES.

[1. *Indigofera sericea*. *Silky-leaved Indigo*.

Lin. syst. 677. Reich. 3. 516. mant. 271.

Leaves simple, lanceolate, silky, spikes sessile, stem shrubby.

2. *Indigofera oblongifolia*. *Oblong-leaved Indigo*.

Vahl. symb. 1. 55. Forsk. descr. 137. n. 26.

Leaves simple, oblong, silky, racemes axillary, stem shrubby.

3. *Indigofera linifolia*. *Flax-leaved Indigo*.

Vahl. symb. 1. 55. Retz. obs. 4. 29. & 6. 33. n. 61. t. 2.

Hedyarum linifolium. Linn. suppl. 331. syst. 672.

Leaves simple, linear, hoary, legumes globular.

4. *Indigofera ovata*. *Ovate-leaved Indigo*.

Lin. syst. 677. suppl. 335.

Leaves simple, ovate, stem herbaceous.

5. *Indigofera spinosa*. *Thorny Indigo*.

Vahl. symb. 1. 55. Forsk. descr. 137. n. 37.

Leaves ternate, obovate, peduncles spinescent, stem shrubby.

6. *Indigofera trifoliata*. *Trifoliate Indigo*.

Lin. spec. 1062. syst. 677. Reich. 3. 516. amoen. 4. 327.

Leaves ternate, flowers sessile, lateral.

7. *Indigofera psoraloides*. *Long-spiked Indigo*.

Lin. syst. 677. Reich. 3. 517.

Cytisus psoraloides. Lin. spec. 1043. amoen. 6. afr. 33.

C. africanus. Rivin. tetr. f. 135.

Trifolium æthiopicum, &c. Pluk. phyt. t. 320. f. 3.

Leaves ternate, lanceolate, racemes very long, legumes drooping.

8. *Indigofera candicans*. *White Indigo*.

Ait. hort. kew. 3. 67. Curt. magaz. t. 198.

Leaves ternate, lanceolate-linear, silky underneath, spikes peduncled, few-flowered, legumes cylindric, straight.

9. *Indigofera amoena*. *Scarlet-flowered Indigo*.

Ait. hort. kew. 3. 68.

Leaves ternate, oval, somewhat hairy, branches round, spikes

- spikes peduncled, stipules bristle-shaped, calyxes loose, stem frutescent.
10. *Indigofera procumbens*. Prostrate Indigo.
Lin. syst. 677. Reich. 3. 517. mant. 271.
Leaves ternate, obovate, stem herbaceous, prostrate, spikes peduncled.
11. *Indigofera sarmentosa*. Dwarf Indigo.
Lin. syst. 677. suppl. 334. Ait. hort. kew. 3. 68.
Leaves ternate, ovate, subsessile, peduncles axillary, two-flowered or thereabouts, stem prostrate, filiform.
12. *Indigofera denudata*.
Lin. syst. 677. suppl. 334.
Leaves ternate, ovate, smooth, racemes peduncled, longer than the leaf, stem shrubby, upright.
13. *Indigofera mexicana*.
Lin. syst. 678. suppl. 335.
Leaves ternate, panicle branched into spikes, stem shrubby.
14. *Indigofera trita*.
Lin. syst. 678. suppl. 335.
Leaves ternate, ovate, acute, racemes short, stem upright.
15. *Indigofera coccinea*.
Lour. cochinch. 457.
Leaves ternate, ovate-oblong, peduncles many-flowered, axillary, legumes round, bowed.
16. *Indigofera rotundifolia*.
Lour. cochinch. 458.
Leaves ternate, roundish, tomentose on both sides, racemes short, axillary, stem twining.
17. *Indigofera bufalina*.
Lour. cochinch. 458.
Leaves ternate, ovate, smooth, racemes axillary, legumes thick, villose, stem climbing.
18. *Indigofera filiformis*.
Lin. syst. 678. suppl. 334.
Leaves quinate, oblong, villose, flowers in spikes, peduncled, peduncles and branches filiform, stem upright.
19. *Indigofera coriacea*. Leathery-leaved Indigo.
Ait. hort. kew. 3. 68.
Ononis mauritanica. Lin. mant. 267. Reich. syst. 3. 433.
Lotus mauritanicus. Lin. spec. 1091.
L. fruticosus. Berg. cap. 226.
Leaves quinate, obovate, mucronate, hairy, stipules awl-shaped, legumes straight, smooth.
20. *Indigofera digitata*.
Lin. syst. 678. suppl. 335.
Leaves digitate, racemes peduncled, stem shrubby.
21. *Indigofera stricta*.
Lin. syst. 678. suppl. 334.
Leaves pinnate, smooth, oblong, racemes axillary, scarcely peduncled, stem shrubby, upright.
22. *Indigofera frutescens*.
Lin. syst. 678. suppl. 334.
Leaves pinnate, ovate, smooth, racemes axillary, peduncled, stem shrubby, upright.
23. *Indigofera cytisoides*. Angular-stalked Indigo.
Lin. syst. 678. Ait. hort. kew. 3. 68.
Psoralea cytisoides. Lin. spec. 1076. Comm. hort. 2. 167. t. 84. (Lotus). Pluk. phyt. 185. f. 5. (Genista).
Leaves quinate-pinnate and ternate, racemes axillary, stem shrubby.
24. *Indigofera fragrans*.
Retz. obs. 4. 29. n. 97.
Colutea filiquosa. Pluk. phyt. t. 166. f. 1.
Leaves quinate, pinnate, leaflets ovate, hairy, the outmost larger, legumes four-cornered.
25. *Indigofera enneaphylla*. Trailing Indigo.
Lin. syst. 678. Reich. 3. 517. mant. 272. 571.
Retz. obs. 4. 29. n. 98.
Hedysarum prostratum. Lin. mant. 102.
Leaves pinnate, wedge-shaped, in sevens, stems prostrate, spikes lateral.
26. *Indigofera semitrijuga*.
Vahl. symb. 1. 56. Forsk. descr. 137.
I. argentea. Burm. ind. 171.
Leaves pinnate, obcordate, in fives, legumes subspiked, pendulous, torulose, stem prostrate, suffruticose.
27. *Indigofera pentaphylla*. Five-leaved Indigo.
Lin. syst. 678. Reich. 3. 518.
Leaves pinnate, oval, in fives, stems prostrate, peduncles two-flowered.]

28. *Indigofera glabra*. Smooth Indigo.
Lin. spec. 1062. syst. 678. Reich. 3. 518. fl. zeyl. n. 274. amoen. 1. 408.
Leaves pinnate and ternate, obovate, racemes very short, legumes horizontal, columnar.
29. *Indigofera hirsuta*. Hairy-leaved Indigo.
Lin. spec. 1062. syst. 678. Reich. 3. 519. amoen. 1. 408. fl. zeyl. n. 272. Burm. zeyl. 37. t. 14. (Astragalus). Rheed. mal. 1. 55. t. 30.
I. indica. Mill. dict. n. 4. Reich.
Leaves pinnate, hirsute, stem upright, flowers in spikes, legumes pendulous, woolly.
- [30. *Indigofera spicata*. Spiked Indigo.
Vahl. symb. 1. 56. Forsk. descr. 138.
Leaves pinnate, obovate, flowers in spikes, legumes columnar, torulose, pendulous, stem decumbent.
31. *Indigofera angustifolia*. Narrow-leaved Indigo.
Lin. syst. 678. Reich. 3. 519. mant. 272.
Leaves pinnate, linear, racemes elongated, stem shrubby.]
32. *Indigofera Anil*. Wild Indigo.
Lin. syst. 678. Reich. 3. 520. mant. 272. Brown. jam. 302. 3.
I. suffruticosa. Mill. dict. n. 2.
Colutea fruticosa argentea, &c. Sloan. jam. 2. 37. t. 176. f. 3.
Leaves pinnate, lanceolate, racemes short, stem suffruticose.
33. *Indigofera tinctoria*. Dyer's Indigo.
Lin. spec. 1061. Reich. 3. 520. fl. zeyl. n. 273. amoen. 1. 408. hort. ups. 208. cliff. 487. mat. med. 174. Thunb. jap. 290. Lour. cochinch. 458. Brown. jam. 302. 1. Mill. fig. t. 34. Blackw. t. 596.
Indicum. Plin. l. 35. c. 6. f. 27. Rumph. amb. 5. 220. t. 80.
Isatis indica, fol. rosmarini, glastii affinis. Baub. pin. 113.
Anil. Garc. arom. l. 2. c. 26. p. 239. — f. Nil. indorum color. Baub. hist. 2. 945. — f. Indigo americana. March. ast. par. 1718.
Nil si Anil, *Glastum indicum*. Park. theat. 600. Raii hist. 926.
Ameri. Rheed. mal. 1. 101. t. 54.
Colutea indica humilis, ex qua Indigo, fol. viridi. Burm. zeyl. 69.
Colutea affinis fruticosa, &c. Sloan. jam. 2. 34. t. 179. f. 2.
Leaves pinnate, obovate, racemes short, stem suffruticose.
- [34. *Indigofera disperma*.
Lin. syst. 678. Reich. 3. 520. Trew. Ebret. 24. t. 55.
Leaves pinnate, oval, racemes elongated, legumes two-seeded.
35. *Indigofera argentea*. Silvery-leaved Indigo.
Lin. syst. 678. Reich. 3. 521. mant. 273. L'Herit. stirp. nov. 6. p. 165. t. 79. Vahl. symb. 1. 56.
I. articulata. Gouan. illustr. 49. Zan. hist. t. 12. p. 18.
I. tinctoria. Forsk. descr. 138.
Leaves ternate and pinnate, obovate, silky, legumes torulose, pendulous.

DESCRIPTIONS, &c.

At the end of the last century it was not known in Europe with certainty what plant produced the dye which was known to the Romans by the name of *Indicum*, and was so much used as a dye, &c. under the name of Indigo. It was cultivated, however, by Mr. Miller so early as the year 1731. Only five species were imperfectly known to Linneus in 1763: and Mr. Miller has only the same number in the last edition of his Dictionary. Twenty-three species are enumerated in the fourteenth edition of the *Systema Vegetabilium* by Chevalier Murray: and our catalogue contains thirty-five species.

The Indigos are shrubs, undershrubs or herbs. The leaves are in some few cases simple, in more ternate, in most unequally pinnate, the leaflets in some jointed and awned at the base, as in *Phascolus*. Stipules distinct from the petiole. Peduncles axillary, one or two-flowered, but more frequently many-flowered, in spikes or racemes. Legume ovate, short, (two-seeded in *I. enneaphylla*.) The herb in most of the species yields

a blue

a blue dye^a: which, however, is not peculiar to this genus; for many plants of this natural class abound with the same blue-colouring matter.

1. Stems determinately branched or proliferous, filiform, rugged with scars, with leafy branchlets. Leaves clustered, short, acute, pubescent; varying, with the edge naked and coloured. Spike terminating, ovate, villose, with bractes the length of the calyxes between the flowers. Keel of the corolla shorter than the other petals, dark purple, with a long claw, and on each side a spur. Native of the Cape of Good Hope^b.

2. This is a shrub, with tomentose-filky branches. Leaves subsessile, remote. Rudiments of branchlets in the axils. Stipules minute, bristle-shaped. Racemes three times as long as the leaf. Flowers numerous. Calyx filky-tomentose. Standard of the corolla very finely villose^c.

3. Stem short, upright. Branches elongated, slender, rod-like, decumbent, angular, finely villose. Leaves alternate, blunt, with a short point, quite entire, keeled, on short petioles, clothed with short white hairs pressed close to them. Flowers three or four, on short pedicels in the axils of the leaves, red. Calyx five-cleft; segments acute, ciliate, spreading. Standard of the corolla cordate, acute, flat, bent back at an acute angle: wings bent down, flat, ovate, blunt, longitudinally incumbent on the keel, with their upper margins: keel the same length with the standard, boat-shaped, compressed, green on the outside and hairy, putting forth a sharp elongated tooth at the middle of each side. Fruit globular, crowned with the style, snow-white, one-seeded^d.

Native of the East Indies, where it was observed by Koenig, who sent it to Europe together with the seeds under this name, though it is described as a *Hedyсарum* by the younger Linneus in his Supplement. It has, however, the spur on each side of the keel, which determines it to be an *Indigofera*, nor has it the habit of the *Hedyсарums*; according to the remark of Vahl, who cultivated it at Copenhagen.

4. This was found at the Cape of Good Hope by Thunberg^e.

5. This is a shrub with an ash-coloured bark, and very much branched. Branches attenuated, cut off at top, leafless, very thorny; spinecent from the permanent peduncles: branchlets leafy, scattered on the older branches, short. Leaves on very short petioles; leaflets sessile, hoary, equal, minute. Stipules acerose, minute. Peduncles from almost all the axils, permanent and becoming thorns, double the length of the leaf, bearing two or three flowers. Calyx villose, five-cleft. Standard of the corolla ash-coloured on the outside. Legumes somewhat columnar, villose. Native of the East Indies and Arabia^f.

6. Legumes linear, reflex, four-cornered with two opposite sides broader than the two others^g. Native of the East Indies.

7. Stem perennial, angular, with three ribs occasioned by the petioles running down it, and somewhat rugged. Peduncle angular, longer than the leaves in a many-flowered raceme; pedicels very short. Bractes caducous. The upper teeth of the calyx more divaricate than in the others. Corollas red: wings horizontal, converging with their upper margins; the keel has an awl-shaped, concave reflex tooth in the middle on each side. Germ channelled: style purple: stigma blunt. Seeds many^h.

Native of the Cape of Good Hope. Cultivated by Mr. Miller in 1758. It flowers from July to Septemberⁱ.

Perhaps this may be the *glabra* of Miller; which, as far as we can judge, is not the *glabra* of Linneus.

In the *Amoenitates Academicæ* it is described under the name of *Cytisus psoraloides*, as a shrub a foot high, with awl-shaped stipules; the leaves petioled, the leaflets all sessile, lanceolate, almost naked; the spikes peduncled, upright, the calyxes pubescent, the flowers closely reflex.

^a Jussieu.

^d Retzius.

^g Linn. syst.

^b Linn. mant.

^e Linn. suppl.

^h Ibid.

^c Vahl.

^f Vahl.

ⁱ Hort. kew.

8. This species is distinguished by the whiteness of the stem and the under-side of the leaves. The flowers are red; not many (five to eight or nine) in a spike^k. Native of the Cape of Good Hope, whence it was introduced by Mr. Fr. Masson in 1774. It flowers from July to September^l: but its principal time of flowering, according to Mr. Curtis, is from the beginning of May to the middle of June.

9. This also is a native of the Cape, and was introduced by the same person at the same time. It flowers in March and April^m.

10. Stems a foot long, somewhat angular, almost naked. Leaves alternate, petioled, remote: leaflets equal, submucronate, scarcely pubescent on the upper side, but more pubescent underneath, and paler: petiole spreading, the length of the leaflets. Stipules awl-shaped, patulous, shorter than the petioles. Spike axillary, lateral, oblong, without bractes. Peduncle many times longer than the leaves. Flowers dark purple. Native of the Cape of Good Hopeⁿ.

11. This was found at the Cape by Thunberg, and also by Masson, who introduced it at Kew in 1786. It flowers in June^o.

12. This also was found at the Cape by Thunberg.

13. This is a shrub, with rufescent, pubescent branches. Leaves remote, petioled: leaflets ovate, naked, almost equal, subsessile. Stipules ovate, minute. Panicle terminating, composed of eight or nine peduncled spikes. Found in New Granada by Mutis^p.

14. Stem upright, green, having the appearance of *I. Anil*, branched at bottom. Leaves petioled. Racemes lateral, shorter than the leaves, upright, red, like those of *I. Anil*. Native of the East Indies^q.

15. Stem shrubby, manifold, almost upright, branched. Leaves blunt, pubescent, small. Calyx five-cleft, with the upper edge cut off, gaping. Corolla scarlet, with two long reflex spurs to the keel. Legume long, slender. Native of China about Canton.

16. Stem herbaceous, filiform, hairy. Leaves sharpish at the tip. Stipules awl-shaped. Corollas yellow, with two long, awl-shaped, curved spurs to the keel. Legume oblong, flat, acuminate, smooth, two-seeded. It is allied to *I. procumbens* (n. 10.) Native of China about Canton.

17. Stem suffruticose, round, long, smooth. Flowers in both axillary and terminating racemes, on a long common peduncle. Calyx two-lipped, five-cleft, spreading. Corolla white-purple, with the keel repelling the standard by two callous teeth put forth above the base. Legume long, straight, somewhat compressed. Seeds ovate. Native of CochinChina^r.

18. Found at the Cape of Good Hope by Thunberg^s.

19. In Linneus's species plantarum this plant is described under the name of *Lotus mauritanicus*, as a small shrub, with filiform rigid branches. Leaves petioled, with white hairs scattered over both sides. Stipules the size of the leaves, lanceolate-ovate. Peduncles axillary, long, racemed. Legumes half as long again as the leaves. In the Mantissa, it was removed to the genus *Ononis*, and now in the Catalogue of the Royal Garden at Kew into this genus.

Native of the Cape of Good Hope. Introduced in 1774, by Mr. Francis Masson. It flowers in July and August^t.

20, 21, 22. These were found at the Cape of Good Hope by Thunberg^u.

23. This is thus described, as a species of *Psoralea*, by Linneus, in his Species Plantarum. Shrubby, with angular branches. Lower leaves ternate, upper quinate-pinnate: leaflets oblong, hoary, mucronate, almost equal. Stipules awl-shaped; with two little bristles at the base of the leaflets. Racemes longer than the leaves, with ovate, mucronate, deciduous bractes. Calyx a little shorter than the corolla. Standard of the

^k Curtis.

ⁿ Linn. mant.

^p Linn. suppl.

^q Linn. suppl.

^l Hort. kew.

^o Linn. suppl. and Hort. kew.

^r Ibid.

^s Hort. kew.

^m Ibid.

^t Loureiro.

^u Linn. suppl.

corolla upright. Legume subcylindric, with isthmuses separating the seeds.

Native of the Cape of Good Hope. Introduced in 1774 by Mr. Francis Masson. It flowers in July.

24. Stems round, somewhat hairy. Leaflets hairy on both sides, the end one obovate and larger than the others. Stipules lanceolate, acute, rough-haired. Peduncles longer than the leaf, axillary, bearing from three to five flowers. Calyxes white with hairs. Corollas red. Legumes linear, square. Found in the East Indies by Koenig^x.

25. Plant depressed to the ground. Stems several, round, even, a palm in length, with the lower branches depressed. Leaves also depressed, spreading; leaflets seven, (sometimes five or nine) alternate, bluntish, channelled, even, (frequently retuse, smooth above, but have imbricate, tomentose, or ash-coloured hairs underneath. Stipules membranaceous, patulous, bifid: *mant.* 1. 102.) Spikes axillary, sessile, roundish. Calyx almost five-parted; the parts lanceolate-awl-shaped. Corolla dark purple, with the back of the standard paler, and recurved little horns to the keel^y. Legumes ovate-cylindric, even, equal, mucronate with the straight pistil. Seeds two^z. Native of the East Indies.

It is twice described in the *Mantissas* under this name and that of *Hedysarum prostratum*^a.

26. This is a small shrub, with round, simple branches, villose-hoary, as is the whole plant. Leaflets sessile, mucronate; the end one larger. Stipules linear. Spikes axillary, longer than the leaves. Flowers somewhat remote, commonly from eleven to thirteen. Legumes oblong, small, two-seeded. It resembles the twenty-fifth and twenty-seventh in many circumstances, but is sufficiently distinct from both. Native of the East Indies and Arabia^b.

27. Herb depressed, extremely divaricate. Flowers red. It resembles *I. enneaphylla* very much, but the peduncles are two-flowered, and the plant is double the size. Its native place is not mentioned^c.

28. This is an annual plant, with smooth leaflets, the end one larger^d: generally five, seldom three. The stem also is smooth. Peduncles axillary, having frequently three alternate flowers. Legumes bent back at a right angle, with the peduncle horizontal^e. Native of the East Indies.

29. Stem lofty, hairy. Leaflets seven, obovate, remote, the end one larger. Stipules bristle-shaped, an inch long. Spikes upright, longer than the leaves, axillary, very hirsute. Calyxes and legumes woolly, pendulous. Petals caducous^f. Native of the East Indies.

30. Stem herbaceous, villose. Leaflets nine, subpetioled, villose; the end one larger. Stipules lanceolate-awl-shaped, dry. Spikes longer than the leaves, thrice the size when in fruit. Legumes villose. The preceding differs from this, in having an upright shrubby stem, bristle-shaped stipules, and extremely hirsute four-cornered legumes. Native of Arabia^g.

31. Stem suffrutescent, somewhat even; branches alternate, the length of the stem. Leaves alternate, subsessile; leaflets nine or eleven, equal, acute, subpubescent, rolled back at the edge. Stipules acerose, minute. Racemes axillary, lateral, much longer than the leaves. Calyxes alternate, hoary. Corolla ash-coloured purple on the outside: keel with spurs^h.

Native of the Cape of Good Hope. Introduced in 1774, by Mr. Francis Masson. It flowers from June to Octoberⁱ.

32. This has the habit and appearance of the next species. Leaflets oblong, bluntish, (the younger ones sharpish) naked above, hoary underneath, all equal. Racemes lateral, subspiked, shorter than the leaves. Legumes declining, recurved, inclined to columnar, many-seeded, more gibbous at each future (opening by the receding of the upper future) mucronate^k.]

Mr. Miller says, it grows to the height of five or six feet (if this be his *suffruticosa*); and that being a

much larger plant, it will afford a greater quantity of Indigo from the same compass of ground than any of the other species, especially if cut before the stalks grow woody; it will also grow on poorer land.

[Native of the East Indies; and very common in Jamaica, growing wild in all the Savannas, where doubtless it had been cultivated in former times: for there, we often meet with some of those Indigo-works, which were then built, and remain very perfect to this day. It is hardier than any of the other sorts, and grows very luxuriantly even in the driest Savanna lands; but it does not yield so much pulp; the dye, however, that is extracted from it, is generally the best, of a fine copperish cast, and a close grain^l.

33. This differs from the preceding, in the leaflets being obovate, blunt, naked on both sides; the legumes columnar, straight, but more gibbous at the future; as in that, and subtorulose, in loose minute racemes^m.

Thunberg describes it thus. Stem filiform, subflexuose, angular, smooth, upright, a foot and half high, a little branched at top. Branches like the stem, alternate, upright. Leaflets in four pairs or more, very blunt with a point, smooth, very finely villose underneath, almost equal. Racemes from the axils of the leaves, when they begin to flower much shorter than the leaf, but becoming longer as they advance. Legumes drooping, subcolumnar, sharp, straight, very finely villose.

Specimens of this plant from different parts of India, Madagascar, Java, Ceylon, &c. vary very much, if they are all really the same species. The stem is higher or shorter, more or less hairy or smooth; the leaves have from four or five to eight pairs of leaflets, larger or smaller, more or less villose; the legumes are straight or bowed, villose or smoothⁿ.

Linneus, in his *flora zeylanica* says, that the leaves have nine or eleven pairs of leaflets, which are green; and that it is almost an exotic in Ceylon, but frequent in Paliacotta and Coromandel.

According to Loureiro it is spontaneous in China and Cochinchina, and is cultivated all over those vast Empires.—He thus describes it. Stem upright, simple, three feet high, straight, columnar, smooth, branched. Leaves composed of about seven pairs of leaflets, which are ovate, quite entire, smooth, glaucous, on short petioles. Racemes axillary, simple, upright. Calyx flat-tish; slightly five-cleft. Standard of the corolla oblong-ovate, ascending, yellow; wings and keel red, the latter having a tooth on each side at the base. Legume long, slender, round, slightly bowed and torulose, smooth, pendulous, containing several cylindrical seeds.

Dr. Patrick Browne, besides the Wild Indigo already mentioned, has two others which he calls the Indigo, and the Guatemala Indigo. The former seldom above two feet and a half in height, and seeming to divide rather than to branch in its growth: the latter commonly three or four feet high; throwing out many suberect branches as it rises. This is much hardier, and affords a finer pulp, but it does not yield so great a quantity, and is only cultivated where the seasons are not so certain, or in mixt fields. The former yielding more of the dye than either of the others, is generally preferred, though subject to many more mischances.

Mr. Miller cultivated the Dyer's Indigo so long ago as the year 1731^o.] He calls it Guatemala Indigo, and says it is an annual plant with us. [He has five sorts in all, but not having described them, we are in some degree uncertain what species he intended. His suffruticosa (n. 2.) is probably our thirty-second species, *I. Anil*. His indica (n. 4.) is supposed to be our twenty-ninth species, or *I. hirsuta*. His glabra (n. 5.) may possibly be the same with the *glabra* of Linneus; but as he only says it has smooth taper pods, and trifoliate leaves, we cannot determine it with any certainty. His *I. caroliniana* (n. 3.) cannot be the *I. tinctoria* or true Dyer's Indigo, if the leaves have five leaflets only, and the flowers are in very long, loose spikes; but it is probably the same with one of the

^x Retzius. ^y Linn. mant. 2. 272. ^z Mant. 1. 102.
^a Retzius. ^b Vahl. ^c Linn. syst.
^d Ibid. ^e Linn. zeyl. ^f Linn. syst. & zeyl.
^g Vahl. ^h Linn. mant. ⁱ Hort. kew.
^k Linn. mant.

^l Browne.

^m Linn.

ⁿ Thunb. jap.

^o Hort. kew.

ports commonly cultivated in the West Indies, which are not originally natives there, but transported from the East Indies.

The ancients were acquainted with the dye which we call Indigo, under the name of *Indicum*. Pliny knew that it was a preparation of a vegetable substance, though he was ill informed both concerning the plant itself, and the process by which it was fitted for use. From its colour, and the country from which it was imported, it is denominated by some authors *Atramentum Indicum*, and *Indicum nigrum*^p.

Even at the close of the sixteenth century it was not known in England what plant produced Indigo. For in the Remembrances for master S. by Richard Hakluyt in 1582, he was instructed "to know if "*Anile*, that coloureth blew, be a natural commodity " of those parts (Turkey), and if it be compounded " of an herbe—to send the seed or root, with the " order of sowing, &c.—that it may become a na- " tural commodity in the realme, as *Woad* is, that " the high price of foreign Woad, may be brought " down^q."

Gerarde, in 1597, is wholly silent about it, and so is Johnson in 1632. Parkinson however, in 1640, treats largely of it. He calls it *Indico* or *Indian Woade*, and gives a figure of the leaf from De Laet. He then describes it, first from Francis Ximenes in De Laet's description of America: and secondly, from Mr. William Finch, a London Merchant, in Purchas's Pilgrims. (B. 4. C. 4. p. 429.)

Even in 1688, Mr. Ray says, it was not agreed among botanists, what plant it is from which Indigo is made; but that the most probable opinion was, that it is a leguminose shrub, allied to *Colutea*. He describes it from Hernandez and Marcgraaf; and subjoins that of the *Ameri* from the Hortus Malabaricus. *Nil* or *Anil* is the American name. It is *Nile* also in Arabic. The Portugueze have adopted their *Anil* or *Anileira* from the American. The other European nations generally call it *Indigo*. In Chinese it is *Tien Laam*, which signifies Sky Blue.

Method of manufacturing Indigo in the West Indies.

The works for steeping and fermenting the Indigo consist of three or five square cisterns or vats, well cemented, terraced and seasoned. They are made gradually smaller, and so situated as to have the top of the second and third on a line with the bottom of the first, or a little lower; and the top of the fourth and fifth on a line with, or lower than, the bottom of the second and third. The first is called the *Steeper*, and is generally made about eight or ten feet square, by four deep, and opens into the second and third by round holes, made close to the bottom, so as to discharge all the tincture readily. The second, or second and third vats are called the *Beaters*. If there be only one, and the liquor is to be worked up with hand buckets, it should be eight or ten feet square, and six feet deep: but if there be two, and the tincture is to be beaten with an engine, they should be so deep as to hold all the liquor a good way below the main or horizontal axis into which the buckets are fixed; and the walls should be nearly as high over the rollers, as the cistern is deep below them, to prevent the tincture from being wasted. After the liquor is well beat, it is left to settle; and when the pulp is deposited, the clear fluid is drawn off by a vent placed some inches above the bottom of each cistern: and the remainder is discharged into the fourth and fifth cisterns, by convenient outlets, placed close to the bottom. These last cisterns are small; they are however generally made square, and proportioned to the quantity of pulp such works commonly produce at a time.

These works being in good order, and the plants cut and carried to them, they are laid in the steeper, and when that is pretty full, boards are laid over them, supported by props, from the beams that overlay the cistern: these being well settled, they put in as much water as will cover the weed, and leave it to digest and ferment, until the greatest part of the pulp is ex-

tracted; without letting the tender tops run to putrefaction. In the management of this point the judgment of the planter chiefly consists; for if he draws off the water but two hours too soon, he loses the greatest part of the pulp; and if the fermentation runs but two hours too long, the whole is spoiled. They frequently therefore draw out a handful of the weed, and when they find the tops grow very tender and pale, and observe the stronger leaves to change their colour to a less lively pale, they draw off the liquor without delay. They soon learn to know this critical point, by the height of the fermentation, and grain of the tincture; of which they frequently beat a little in a silver cup, for that purpose.

The pulp being thus extracted, the tincture is discharged into the beaters, and there worked up by two or three negroes, each with a bucket, (or by an engine.) They agitate it, until the dye begins to granulate, or float in little floculæ in the water; which separation is greatly forwarded by a gradual addition of clear lime water. The different stages of this operation are distinguished, by examining a small quantity of the liquor in a silver cup, from time to time; and a little experience soon learns them to know when to stop by a single drop upon the nail at any degree of height, as they would have their Indigo of a deep copperish blue, or of a paler colour.

The liquor is now left undisturbed, until the floculæ settle; then the water is discharged, and the magma or mud is let out by a lower vent into its proper receptacles. This is again, by some, put into a cauldron, and heated over a gentle fire, but not so as to boil, and then emptied into little bags to drain: by others it is not heated, but immediately put into the bags: by all, it is afterwards put into square boxes, with the sides not above four inches deep, that it may dry the sooner, and without crumbling, which it is otherwise apt to do^r.

34. This resembles the preceding, but the racemes are longer than the compound leaves, and the legumes are two-seeded^s. The stem is weak, the leaflets oblong, pale green and smooth, the peduncles very long, and the flowers loosely disposed; the legumes compressed, short and roughish^t.

Native of the East Indies.

35. The whole plant is silky and glaucous. Stem suffruticose, upright, branched, round, from half a yard to three quarters of a yard in height, and gray. Branches alternate, stiff, round, finely silky and hoary. Leaves alternate, petioled, two-paired (seldom ternate), spreading, three inches long: leaflets opposite, subsessile, (the end one larger and petioled); quite entire, bluntish, the older ones subemarginate, the midrib raised only underneath; finely silky, glaucous, spreading, flat, from twelve to fifteen lines in length, and from six to eight lines in breadth. Petioles round on one side, grooved on the other. Racemes axillary, solitary, upright, shorter than the leaves, an inch and half long. Flowers on short, alternate, reflex pedicels, drooping. Calyx wheel-shaped, five-cleft, acute, pubescent, the two upper teeth more remote. Corolla blood-red-purple: petals nearly equal, larger than the calyx: standard roundish, reflex, concave, pubescent on the outside, sessile; wings oblong, blunt, on short claws, loose; keel two-petalled, clawed, ovate, compressed, scarcely shorter than the wings, with a process at the base on each side filling up the cavity left by the wings, pubescent on the outside. Filaments connected very high up, scarcely longer and shorter alternately, and very little shorter than the keel: anthers roundish, acuminate, two-celled, larger on the longer filaments. Legume columnar, jointed in a manner, like a necklace, tomentose, hoary, six lines in length. Seeds few (three or four), separated by membranes, roundish, bay-coloured^u.

Gouan describes the stem as three feet high and angular, strigose with crowded hairs pressed to it, and rugged when handled from above downwards. The branches also are angular. The lower stem-leaves and

^p Robertson's India, p. 353.

^q Voyages 2. 161 edit. 1599.

^r Browne.

^s Linn.

^t Trew Ehret.

^u L'Heritier.

the inner branch-leaves are simple, obovate and ash-coloured, rugged with hairs pressed close, on petioles equal to the leaf: the other leaves to the middle of the stem and branches are ternate, with ovate leaflets, acuminate both ways, the outmost larger than the two others: those which terminate the stem and branches are like the others, but quinate. Petioles equal to the leaflets, three-sided at the base, their edges and midrib running down the stem and branches, so that the branches seem to be three-sided a little below the base of the petioles. Racemes an inch long, from the axils of the ternate and quinate leaves. Flowers in each raceme from nine to twelve, purple, very small as in *I. tinctoria*. Legume cylindric, jointed or knobbed at the seeds; joints globular, the outmost mucronate. Seeds one, two or three, subglobular, not cylindric, flat at top and bottom, as in *I. tinctoria*. Linneus says, that the legumes have usually three seeds in them. According to him it is a native of the East Indies. Monf. L'Heritier says, it is a native of Egypt, and that he had the seeds from Alexandria by Jean Baptiste Mure, Consul-general in Egypt, in the year 1783: and that he had since been informed by Professor Louiche Desfontaines that it is cultivated abundantly in the kingdom of Tunis for dyeing, but is not indigenous there. The Arabs call it *Hab-nil*.

Whether the plant described by Monf. L'Heritier and Monf. Gouan be the same is not quite certain. The former refers to Linneus's *mantissa*; and Vahl, who refers to Gouan, refers also to the same work of Linneus's. Linneus himself refers to the *suffruticosa* of Miller, n. 2. and Sloan's Jamaica, A. 176. f. 3. for which see n. 32.

In the Kew catalogue, *I. argentea* is said to be a native of the West Indies, and to have been introduced in 1776, by Mr. Gilbert Alexander.

General Remarks.

There is much confusion in the species yet to be cleared up: and we are yet uncertain whether the plants cultivated in different countries for dyeing, be really distinct species or only varieties. Gartner has a species which he received from our Hudson, and calls *Ind. sumatrana*, but he gives no specific difference.

An attention to the following circumstances, will assist in discriminating the species already known.

Shrubby. 1. 2. 5. 7. 8. 9. 12. 13. 15. 19 to 23. 29.

Suffruticose or Undershrubby. 17. 26. 31 to 35.

Herbaceous. 3. 4. 10. 11. 16. 25 to 28. 30.

Most of these are perennial, but 3 and 28 are annual.

Leaves simple in 1. 2. 3. 4.

ternate in 5 to 17.

pinnate in the rest.

Of these last, some are quinate, or have only two pairs of leaflets, besides the odd one: as 18, 19. 24. 26, 27.

In 23. 28 and 35. some of the leaves are quinate and others ternate.

The twentieth species has digitate leaves.

Stipules minute, bristle-shaped, in 2 and 29.

minute, acrose, in 5 and 31.

minute, ovate, in 13.

lanceolate-ovate, in 19.

lanceolate-acute, in 24.

lanceolate-awl-shaped, in 30.

awl-shaped, in 7. 10. 16. 23.

linear, in 26.

bifid, in 25.

Inflorescence generally in a spike or raceme.

Spike. 1. 8 to 10. 18. 25. 26. 29. 30.

Raceme. 2. 7. 12. 14. 16. 17. 19 to 23. 28. 31 to 35.

Panicle. 13.

On axillary peduncles:

Two-flowered. 27.

Two or three-flowered. 5. 11.

Three or four-flowered. 3.

Many-flowered. 15.

Axillary sessile. 6.

Bractes in most of the species: except 10.

Caducous, in 7.

Deciduous, ovate-mucronate, in 23.

Length of the calyx, in 1.

Colour of the corolla, mostly red or purple:

Red. 3. 5. 7. 8. 14. 24. 27. 33.

Red purple. 35.

Dark purple. 1. 10. 25.

Very pale purple. 17. 33.

Ash-coloured purple. 31.

Scarlet. 9. 15.

Yellow. 16.

The plants are unarmed, or without thorns and prickles, except in n. 5. which is thorny.

PROPAGATION AND CULTURE.

The species first known in Europe are natives of the East Indies, and may be propagated by seeds.] The seeds must be sown in a hot-bed, early in the spring, and when the plants come up two inches high, they should be transplanted into small pots filled with good fresh earth, and the pots must be plunged into a hot-bed of tanner's bark: when the plants have obtained some strength, the glasses must be raised in the day time. [The perennial sorts may also be increased by cuttings.

The species natives of the East Indies are, 3. 5. 6. 14. 24. 25. 26. 28. 29. 32. 33. 34.

Most of the new species are from the Cape of Good Hope. (1. 4. 7 to 12. 18 to 23. and 31.) These require only the protection of a dry stove or glass case, and may be propagated by cuttings, though some of them do not strike very readily. Several of them ripen their seeds in Europe, and therefore may be also propagated that way.

Several species are natives of Egypt or Arabia, as 2. 5. 26. 30. 35. Two are natives of China, 15 and 16. One of Cochinchina, n. 17. And n. 13. of New Granada in Spanish America. All therefore are the growth of hot climates; and not one of Europe.

Culture of Indigo (n. 33.) in the West Indies.

Indigo seems to thrive best in a free rich soil, and a warm situation; but to answer the planter's toil to his satisfaction, it should be cultivated where it may be frequently refreshed with moisture.

Having first chosen a proper piece of ground, and cleared it, hoe it into little trenches, not above two inches, or two inches and a half in depth, nor more than fourteen or fifteen inches asunder. In the bottom of these, at any season of the year, strew the seeds pretty thick, and immediately cover them. As the plants shoot, they should be frequently weeded, and kept constantly clean, until they spread sufficiently to cover the ground.

Those who cultivate great quantities, only strew the seeds pretty thick in little shallow pits, hoed up irregularly, but generally within four, five or six inches of one another, and covered as before. Plants raised in this manner are observed to answer as well, or rather better than the others, but they require more care in the weeding. They grow to full perfection in two or three months, and are observed to answer best when cut in full blossom. The plants are cut with rape-hooks, a few inches above the root, tied in loads, carried to the works, and laid by strata in the steeper.

The culture of Indigo has been greatly neglected among the English colonists, though no part of the world affords a better soil, or more commodious situations for that purpose than Jamaica. They have begun however to plant there of late years.

Seventeen negroes are sufficient to manage twenty acres of Indigo: and one acre of rich land, well planted, will, with good seasons and proper management, yield five hundred pounds of Indigo in twelve months: for the plant ratoons and gives four or five crops a year: but must be replanted afterwards*.]

Mr. Miller is of opinion that the planters of Indigo sow their seeds too thick, whereby the plants are drawn up with slender stems, not sufficiently furnished with leaves, and those leaves not so large and succulent, as if the plants were allowed a greater share of room. It is a common observation of the cultivators of Woad,

* Browne.

that when the plants spire, and have narrow thin leaves, they produce little dye; they not only therefore make choice of rich strong land, but are careful to thin the plants, that they may have room to spread, and produce large succulent leaves. If the planters of Indigo in America would imitate the cultivators of Woad in this particular, they would certainly find their advantage in so doing.

Another point in which they err is, letting the plant stand too long before they cut it; for the older it is, the drier and firmer are the stalks, and the less will be dissolved by fermentation; nor will the faces of old plants be near so beautiful. It is to be wished therefore that the planters would try some experiments in the culture and management of Indigo, by sowing thin, keeping the plants perfectly clean, and cutting them whilst young and full of juice. But labour being dear in the West Indies, the planters may object to the expense of cultivating Indigo in this manner. To avoid this, the seeds might be sown with the drill plough; and by the use of the hoe plough, ten acres may be kept clean from weeds with as small expense as one with the hand hoe; and by stirring the ground often, and earthing up the plants, they would grow much stronger, be less liable to be destroyed by insects, and have larger and more succulent stalks and leaves.

Though all seasons be good for sowing Indigo, yet care must be taken not to do it in a dry time, because it may be eaten by vermin, carried away by the wind, or choked by weeds: the planters therefore usually choose a season which promises rain, and then they are sure of seeing the plant spring up in three or four days.

INDIGOFERA. See *Sophora*.

INGA. See *Mimosa*.

[INHAME. See *Dioscorea*.

INNOMINATA. See *Conocarpus*.

INOCARPUS. (From *Is*, *ivos*, a fibre, and *καρπος* a fruit; the drupe being fibrose.)

Forst. gen. t. 33. Lin. gen. Schreb. n. 754. suppl. 35.

Thunb. nov. gen. 45. Juss. 152.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Dumosa*.—*Sapotæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, (bell-shaped, Thunb.) bifid; divisions roundish, nearly equal.

COR. one-petalled, tubular. Tube cylindric, the length of the calyx, (shorter, Thunb.) Border five-parted, (or six-parted, F.) longer than the tube: divisions linear, acute, undulated, often reflex.

STAM. Filaments ten, (or twelve, F.) very short, inserted into the tube; (in a double row, F.) the alternate ones inferior. Anthers ovate, twin, upright.

PIST. Germ oblong, villose, superior. Style none. Stigma an excavated point.

PER. Drupe (kidney-form, or F.) ovate, incurved, compressed, large, one-seeded.

SEED. A nut, interwoven with woody fibres: kernel compressed, oval.

ESSENTIAL CHARACTER.

Cal. bifid. Cor. funnel-form. Stam. in a double row. Drupe one-seeded.

SPECIES.

1. *Inocarpus edulis*.

Lin. syst. 408. suppl. 239. Forst. flor. austr. n. 197.

escul. 50. n. 18. Thunb. dist. 46. Rumph. amb.

1. 170. t. 65.

DESCRIPTION, &c.

This is a tree, with alternate leaves, a long span in length, oblong, subcordate, on very short petioles, quite entire, smooth, veined. Spikes (Racemes) axillary, solitary, small, hirsute. Flowers small, alternate, with small bractes^a.

Native of the Society, Friendly and New Hebrides Isles, &c. in the South Seas^b; also in Amboina.

Forster describes it as a lofty tree, the thickness of a man's body, with a brown chinky bark: the branches woody, round, spreading, variously divided, brown, chinky. Leaves subdistich, ovate-oblong, scarcely cordate, blunt and retuse, seldom acute, spreading,

netted with abundance of veins, a span long, and on young trees a foot. Petioles roundish, spreading, smooth and even, transversely striated, half an inch long. General peduncles axillary, subfoliary, round, spreading, covered with a black pubescence, a hand in length. Raceme filiform, quite simple. Pedicels very short, scattered, clustered. Flowers dusky white, scarcely half an inch in length.

In Otaheite this tree is called *Hi*, and the fruit *Ratta*. In Mallicollo the name of the tree is *Nias*, and in Tanna, *Emmer*. In Cook's last voyage (1. 393.) the nuts are called *E-iff*. The kernel of these, which is kidney-shaped, and about an inch in diameter, is eaten roasted by the inhabitants of the Society and Friendly Isles, the New Hebrides, New Guinea, the Molucca Isles, &c. It is sweetish, but less pleasant than the Chestnut, harder and less farinaceous. The bark is astringent, and is used in the dysentery. In New Guinea, they smear the heads of their arrows with the expressed resinous juice^c.

INOCULATING, or Budding. This is commonly practised upon all sorts of stone fruit, in particular Peaches, Nectarines, Cherries, Plums, &c. as also Oranges and Jasmynes, and is preferable to any sort of grafting for most sorts of fruit. The method of performing it is as follows: you must be provided with a sharp penknife, having a flat haft (the use of which is to raise the bark of the stock, to admit the bud) and some sound bafs mat, which should be soaked in water to increase its strength, and make it more pliable; then having taken off the cuttings from the trees you would propagate, you should choose a smooth part of the stock about five or six inches above the surface of the ground, if designed for dwarfs, and for half standards at three feet; but for standards, they should be budded six or more feet above ground; then with your knife make an horizontal cut across the rind of the stock, and from the middle of that cut make a slit downwards about two inches in length, so that it may be in the form of a T; but you must be careful not to cut too deep, lest you wound the stock: then having cut off the leaf from the bud, leaving the foot-stalk remaining, you should make a cross cut about half an inch below the eye, and with your knife slit off the bud, with part of the wood to it, in form of an escutcheon: this done, you must with your knife pull off that part of the wood which was taken with the bud, observing whether the eye of the bud be left to it, or not, for all those buds which lose their eyes in stripping, should be thrown away, being good for nothing; then having gently raised the bark of the stock where the cross incision was made, with the flat haft of your penknife clear to the wood, you should thrust the bud therein, observing to place it smooth between the rind and the wood of the stock, cutting off any part of the rind belonging to the bud, which may be too long for the slit made in the stock; and so having exactly fitted the bud to the stock, you must tie them closely round with bafs mat, beginning at the under part of the slit, and so proceed to the top, taking care that you do not bind round the eye of the bud, which should be left open.

When your buds have been inoculated three weeks or a month, you will see which of them have taken; those of them which appear shrivelled and black, being dead, but those which remain fresh and plump, you may depend are joined; and at this time you should loosen the bandage, which, if not done in time, will pinch the stock, and greatly injure, if not destroy, the bud.

The march following you must cut off the stock about three inches above the bud, sloping it that the wet may pass off, and not enter the stock; to this part of the stock left above the bud, it is very proper to fasten the shoot which proceeds from the bud, and would be in danger of being blown out, if not prevented; but this must continue no longer than one year, after which it must be cut off close above the bud, that the stock may be covered thereby.

The time for Inoculating is, from the middle of june

^a Linn. suppl.

^b Forst. flor.

^c Forst. escul.

until the middle of august, according to the forwardness of the season, and the particular sorts of trees to be propagated; but the time may be easily known, by trying the buds, whether they will come off well from the wood. However, the most general rule is, when you observe the buds formed at the extremity of the same year's shoots, which is a sign of their having finished their spring growth.

The first tree commonly inoculated is the Apricot, and the last the Orange-tree, which should never be done until the middle of august; and in doing this work, you should always make choice of cloudy weather; for if it be done in the middle of the day, in very hot weather, the shoots will perspire so fast, as to leave the buds destitute of moisture; nor should you take off the cuttings from the trees long before they are used; for if you are obliged to fetch your cuttings from some distance, as it often happens, you should then be provided with a tin box or case, having a socket about ten inches long, and a cover to the top, which must have five or six holes; in this socket you should put as much water as will fill it about two or three inches high, and place your cuttings therein in an upright position, so that that part which was cut from the tree may be set in the water, and so fasten down the cover to keep out the air; and the holes in the cover will be sufficient to let the perspiration of these branches pass off, which, if pent in, would be very hurtful to them; you must also be careful to carry it upright, that the water may not reach to the buds; for it is a very wrong practice in those who throw their cuttings all over in water, which so saturates the buds with moisture, that they have no attractive force left to imbibe the sap of the stock, whereby they very often miscarry.

But before I leave this head, I beg leave to observe, that though it is the ordinary practice to divest the bud of that part of the wood which was taken from the shoot with it; yet, in many sorts, of tender trees, it is best to preserve a little wood to the bud, without which they often miscarry. The not observing this, has occasioned some people to imagine, that some sorts of trees are not to be propagated by Inoculation; whereas, if they had performed it in this method, they might have succeeded, as I have several times experienced.

[INOPHYLLUM. See *Calophyllum*.

INSCHI. See *Amomum*.

INTSIA. See *Mimosa*.

INTYBUM and] INTYBUS, See *Cichorium* and *Hieracium*.

INŪLA, (of Pliny. Contracted or corrupted from *Helenium*. Dict. ELEVION; fabled to have sprung from the tears of Helen.)

Lin. gen. n. 956. Reich. 1037. Schreb. 1295. Gært. t. 170. Juss. 181. Enula. Casalp. & Magnol. *Helenium*. Vaill. mem. acad. par. 1720. Moris. Ray, Herm. Rivin.

Class. 19. 2. Syngenesia Polygamia Superflua.

Nat. order of *Compositæ Discoideæ*.—*Corymbifera*, Juss.

GENERIC CHARACTER.

CAL. Common imbricated: leaflets lax, spreading: the exterior ones larger, of equal length.

COR. Compound radiated, broad. Corollules hermaphrodite, equal, very numerous in the disk. Females strap-shaped, numerous, crowded, in the ray.

Proper of the hermaphrodite, funnel-form; border five-cleft, rather upright.

Female strap-shaped, linear, perfectly entire.

STAM. in the hermaphrodite, Filaments five, filiform, short. Anther cylindric, composed of five smaller linear conjoined ones: each ending below in two straight bristles of the length of the filaments.

PIST. In the hermaphrodite, Germ oblong. Style filiform, length of the stamens. Stigma bifid, rather upright. In the females, Germ long. Style filiform, half bifid. Stigmas erect.

PER. none. Calyx unchanged.

SEEDS. In the hermaphrodites solitary, linear, four-cornered, pappus capillary, length of the seeds. In the females, like the hermaphrodites.

REC. naked, flat.

OBS. This genus therefore differs not only from *Aster*, but from most others, in having the anthers terminated below by ten bristles.—But this character is not to be found in all the species.

ESSENTIAL CHARACTER.

Recept. naked. Down simple. Anthers ending in two bristles at the base.

SPECIES.

1. *Inula Helenium*. Common *Inula*, or *Elecampane*.
Lin. spec. 1236. syst. 766. Reich. 3. 823. amoen. 1. 410. mat. med. 186. Woodv. mat. med. 297. t. 108. Gært. fruct. 2. 449. Hudf. angl. 368. Wither. arr. 922. ed. 3. 730. Lightf. scot. 484. Relb. cant. n. 618. Neck. gallob. 357. Leers herb. n. 652. Fl. dan. t. 728. Villars dauph. 3. 213. Krock. files. n. 1410. Thunb. jap. 317. After. Lin. hort. cliff. 407. fl. suec. n. 755. Hall. helv. n. 72.
A. *Helenium*. Scop. carn. n. 1078.
A. *officinalis*. Allion. pedem. 705.
Helenium. Camer. epit. 35. Fuchs. hist. 242. Trag. 170. Matth. 71. Dod. pempt. 344. Tabern. 562. Lob. obs. 309. 1. ic. 1. 574. 2. Baub. hist. 2. 108. Raii hist. 273. syn. 176. Ger. 649. emac. 793. Park. theat. 654. Mor. hist. f. 7. t. 24. row. 3. fig. last. Petiv. brit. t. 16. f. 1. Blackw. herb. t. 473.
H. *vulgare*. Baub. pin. 276.
Leaves stem-clasping ovate wrinkled tomentose underneath, scales of the calyxes ovate.
2. *Inula odora*. Sweet-rooted *Inula*.
Lin. spec. 1236. syst. 766. Reich. 3. 824. Forsk. ægypt. 150. Pallas. itin. 1. 154.
After luteus, radice odora. Baub. pin. 266.
Afteris altera species apula. Col. ecpbr. 1. 251. t. 253. Raii hist. 264. 13.
Conyza altera apula. Mor. hist. 3. 113. f. 7. t. 21. f. 6.
Leaves stem-clasping toothed extremely hirsute, root-leaves ovate, stem-leaves lanceolate, stem few-flowered.
- [3. *Inula suaveolens*. Woolly-leaved *Inula*.
Lin. syst. 766. Jacqu. hort. 3. t. 51. Ait. hort. kew. 3. 224.
Leaves elliptic attenuated at the base subpetioled hairy, lower toothed, stem many-flowered.]
4. *Inula Oculus Christi*. Hoary *Inula*.
Lin. spec. 1237. syst. 766. Reich. 3. 824. Jacqu. austr. 3. t. 223. Villars dauph. 3. 213. Ger. prov. 199. Gouan bot. 364. hort. 444. Krock. files. n. 1411.
After. Lin. hort. cliff. 407.
Conyza pannonica lanuginosa. Baub. pin. 265. Mor. hist. 3. 113. f. 7. t. 19. f. 1. Raii hist. 262.
C. *tertia austriaca*. Clus. hist. 2. 20. Ger. emac. 484. f. 7.
After montanus flore luteo magno hirsutus, quibusdam Oculus Christi. Baub. hist. 3. 1046.
Leaves stem-clasping oblong entire hirsute, stem hairy corymbed.
5. *Inula Britannica*. Creeping-rooted *Inula*.
Lin. spec. 1237. syst. 766. Reich. 3. 824. fl. suec. n. 756. Fl. dan. t. 413. Pallas. it. 1. 370. Villars dauph. 3. 214. Krock. files. n. 1412.
A. *britannicus*. Allion. pedem. n. 712.
a. *Conyza affinis*. Baub. pin. 265.
Conyza palustris repens Britannica dicta. Mor. hist. 3. 113. f. 7. t. 19. f. 8.
β. C. *aquatica*, Afteris flore aureo. Baub. pin. 266. prodr. 124.
Leaves stem-clasping lanceolate serrate distinct villose underneath, stem branched upright villose.
- [6. *Inula dysenterica*. Meadow *Inula*, common or middle Fleabane.
Lin. spec. 1237. syst. 766. Reich. 3. 825. amoen. 1. 410. mat. med. 187. Hudf. angl. 368. Wither. arr. 923. ed. 3. 731. Curt. lond. 3. 56. 164. Relb. cant. n. 619. Sauv. monsp. 85. Neck. gallob. 356. Pollich pal. n. 803. Fl. dan. t. 410. Forsk. ægypt. 150. Villars dauph. 3. 216. Krock. files. n. 1413.
After. Lin. fl. suec. n. 757. Hall. helv. n. 79.
A. *dysentericus*. Scop. carn. n. 1079.

- Conyza media*. Ger. emac. 482. 3. Raii hist. 262. syn. 174. Petiv. brit. t. 16. f. 2.—*Afteris* flore luteo, f. tertia *Dioscoridis*. Baub. pin. 265. Mor. hist. f. 7. t. 19. f. 7.—*Marthioli*, flore magno luteo. Baub. hist. 2. 1050. 1.
- Conyza prima*. Tabern. hist. 1243.
- Herba dysenterica*. Cat. Altdorf.
- Calaminthæ tertium genus*. Fuchf. hist. 436.
- Leaves stem-clasping cordate-oblong, stem villose paniced, calycine scales bristle-shaped.
7. *Inula viscosa*. Clammy *Inula*. Ait. hort. kew. 3. 223.
- Erigeron viscosum*. Lin. spec. 1209.
- Leaves lanceolate toothletted sessile reflex at the base, peduncles lateral one-flowered leafy.
8. *Inula undulata*. Wave-leaved *Inula*. Lin. syst. 766. Reich. 3. 825. mant. 115.
- Helenium ægyptiacum tomentosum & incanum*, &c. Vaill. æt. par. 575.
- Leaves stem-clasping cordate-lanceolate waved.
9. *Inula indica*. Indian *Inula*. Lin. spec. 1237. syst. 766. Reich. 3. 826. Burm. zeyl. t. 55. f. 2. (Jacobæa).
- Leaves stem-clasping cordate-lanceolate ferrate, peduncles one-flowered filiform, flowers globular.
10. *Inula Pulicaria*. Trailing *Inula* or *Fleabane*. Lin. spec. 1238. syst. 766. Reich. 3. 826.
- Erigeron*. Lin. suec. n. 758.
- Conyza*. Lin. hort. cliff. 405.
- C. major* flore globofo. Baub. pin. 266.
- β. *Helenium palustre annuum*, hyssopi fol. crispis. Vaill. æt. par. 575. Barr. ic. 369. (After).
- Conyza minor exotica*. Baub. pin. 265.—*hispanica*. Pluk. mant. t. 384. f. 2.—*media* crispa lacustris, flore nullatenus radiato. Raii suppl. 152.
- Leaves stem-clasping waved, stem prostrate, flowers subglobular with a very short ray.
11. *Inula uliginosa*. Small, Dwarf or Marsh *Inula* or *Fleabane*. Sibth. oxon. n. 711.
- I. cylindrica*. Wither. arr. ed. 3. 731.
- I. Pulicaria*. Hudf. angl. 369. Wither. arr. 924. Curt. lond. 3. 57. 156. Relb. cant. n. 620. Neck. gallob. 356. Leers herb. n. 653. Pollich pal. n. 804. Fl. dan. t. 613. Krock. files. n. 1414. Blackw. t. 103.
- After. Hall. belv. n. 80.—*pulicarius*. Scop. carn. n. 1080.
- Conyza minor*. Matth. 2. 223. Trag. 166. Raii hist. 262. syn. 174. Petiv. brit. t. 16. f. 3.
- C. minima*. Dod. pempt. 52. 3. Lob. obs. 187. 2. ic. 1. 345. 1. Ger. 390. 2. emac. 482. 4.
- C. minor* flore globofo. Baub. pin. 266.
- C. mediæ minor* species, fl. vix radiato. Baub. hist. 2. 1050.
- Chrysanthemum conyzoides palustre*. Mor. hist. f. 7. t. 20. f. 30.
- Upper leaves stem-clasping lanceolate waved, blunt, stem upright, woolly towards the top, calyxes cylindrical.
12. *Inula arabica*. Arabian *Inula*. Lin. syst. 766. Reich. 3. 827. mant. 114. Pluk. phyt. t. 149. f. 4.
- Helenium ramosum*, caul. sparsis, calthæ arv. folio. Vaill. æt. par. 575.
- Leaves oblong sessile, peduncles filiform, calyxes cylindrical.
13. *Inula spiræifolia*. Spiræa-leaved *Inula*. Lin. spec. 1238. Reich. 3. 827.
- Conyza media monspeliensis affinis multiflora*. Baub. hist. 2. 1049.
- Leaves subsessile ovate-oblong naked netted clustered serrulate, flowers terminating subsessile.]
14. *Inula squarrosa*. Net-leaved *Inula*. Lin. spec. 1240. syst. 766. Reich. 3. 827. Gouan illustr. 68.
- After squarrosus. Allion. pedem. n. 708.
- After conyzoides odoratus luteus. Tournef. inst. 483. Segu. ver. 2. 211.—*lut. latifolius glaber*, &c. Pluk. phyt. t. 16. f. 1.
- Leaves sessile oval even netted-veined subcrenate, calyx squarrose.

15. *Inula Bubonium*. Lin. syst. 767. Jacqu. austr. 5. app. t. 19.
- Leaves lanceolate somewhat rigid toothletted subvillose sessile, stem and branches subbiflorous, calyx squarrose.]
16. *Inula falicina*. Willow-leaved *Inula*. Lin. spec. 1238. syst. 767. Reich. 3. 828. amoen. 1. 410. Sauv. monsp. 86. Pollich pal. n. 805. Krock. files. n. 1415. Villars dauph. 3. 217. Ger. prov. 200. Fl. dan. t. 786.
- After. Lin. suec. n. 759. Gmel. fib. 2. 177. t. 77. Hall. belv. n. 76.
- A. falcinus*. Scop. carn. n. 1081.
- A. montanus luteus*, falicis glabro folio. Baub. pin. 266. Raii hist. 266.—fol. falicis. Ger. emac. 588. f. 8.
- Conyza media monspeliensis*, &c. Baub. hist. 2. 1049.
- Bubonium luteum* 1. Tabern. hist. 716.
- Leaves lanceolate recurved ferrate-scabrous, branches angular, lower flowers highest.
17. *Inula hirta*. Hairy *Inula*. Lin. spec. 1239. syst. 767. Reich. 3. 828. Pollich pal. n. 806. Jacqu. austr. 4. 30. t. 358. Pallas it. 1. 154. Villars dauph. 3. 218. Krock. files. n. 1416. Hall. belv. n. 75. (After).
- After luteus, hirsuto falicis folio. Baub. pin. 266.
- A. tertius pannonicus*, Clusii luteus, fol. hirs. falicis. Baub. hist. 2. 1047.
- A. lanuginoso* fol. f. 5 Clus. luteus. Park. theat. 130. f. 5. Raii hist. 266.
- A. ausiriacus* 5 Clus. Ger. emac. 488. f. 9.
- Leaves sessile lanceolate recurved subserrate-scabrous, stem roundish somewhat hairy, lower flowers highest.
18. *Inula mariana*. American *Inula*. Lin. spec. 1240. Reich. 3. 829. Mill. fig. 38. t. 57. f. 1. Pluk. mant. t. 340. f. 1. (After).
- Leaves sessile lanceolate subserrate hairy, peduncles subuniflorous somewhat clammy, leaflets linear.
19. *Inula germanica*. German *Inula*. Lin. spec. 1239. syst. 767. Reich. 3. 829. Pollich pal. n. 807. Jacqu. austr. 2. t. 134. Villars dauph. 3. 219. Gmel. fib. 2. 181. t. 78. f. 1. (After).
- After Bubonium. Scop. carn. n. 1083. t. 58. Villars.
- Conyza affinis germanica*. Baub. pin. 266. Mor. hist. 3. f. 7. t. 19. f. 26.
- Leaves sessile lanceolate recurved scabrous, flowers somewhat sickle-shaped.
20. *Inula japonica*. Japanese *Inula*. Lin. syst. 769. Thunb. jap. 318. Kämpf. amoen. 5. 877.
- Leaves sessile lanceolate toothletted, peduncles rod-like one-flowered.
21. *Inula dubia*. Doubtful *Inula*. Lin. syst. 767. Thunb. jap. 318.
- Leaves sessile oblong ciliate, stem one-flowered.
22. *Inula ensifolia*. Sword-leaved *Inula*. Lin. spec. 1240. syst. 767. Reich. 3. 830. Jacqu. austr. 2. t. 162.
- After ensifolius. Scop. carn. n. 1084. Hall. belv. n. 77?
- A. montanus*, &c. Bocc. mus. 1. 31. t. 18.
- A. luteus*, linariæ rigido glabro folio. Baub. pin. 267.
- A. angustifolius*, &c. Clus. hist. 15. Ger. emac. 487. 10. f. 489. 10. Raii hist. 266.
- A. luteus angust.* Baub. hist. Park. theat. 130. f. 6.
- Leaves sessile linear acuminate nerved smooth scattered, stem one or two-flowered.]
23. *Inula crithmoides*. Trifid *Inula* or Golden Sampire. Lin. spec. 1240. Reich. 3. 830. Hudf. angl. 369. Wither. arr. 924. ed. 3. 732. Engl. bot. t. 64. Vahl symb. 1. 73.
- After. Lin. hort. cliff. 409.—*maritimus flavus*, *Crithmum Chrysanthemum dictus*. Raii syn. 174. hist. 268.
- Senecio crithmifolius*. Scop. carn. n. 1066.
- S. succulentus*. Forsk. descr. 149.
- Crithmum maritimum*, flore asteris attici. Baub. pin. 288.
- C. chrysanthemum*. Dod. pempt. 706. 1. Lob. obs. 215. 1. ic. 1. 395. 2. Ger. 427. 3. emac. 533. 3. Park. theat. 1287. Petiv. brit. t. 17. f. 9. Mor. hist. f. 7. t. 21. f. 16.

C. maritimum

DESCRIPTIONS, &c.

[The Inulas are in general herbaceous plants, with exception to the 28th, 29th, 30th, 32d and 34th species, which are shrubby. The 8th, 9th, 10th, 11th and 12th are annual. Leaves simple, alternate. Flowers yellow (except n. 28), axillary or terminating, frequently in corymbs. They agree in so many circumstances with the Asters, that Tournefort, Haller, Scopoli and others do not separate them. The florets in the ray are more numerous in this genus, and of a yellow colour. Linneus's essential character, of two bristles at the base of the anthers, so far from being common to all the species, is not found even in the majority, according to Gærtner; they are however so small in some species as to escape common observation^a.

1. Elecampane has a perennial, thick, fusiform, brown, branching, aromatic root. According to some it is biennial. It is one of the largest of our herbaceous plants, being from three to five or six feet high, with the stem striated and downy, branched towards the top. Lower leaves on footstalks, lanceolate,] a foot long, and four inches broad in the middle: [upper embracing, ovate-lanceolate, wrinkled, serrated or toothed, deep green and slightly hairy above, whitish green and thickly downy beneath. Flowering heads very large, single, terminating the stem and branches. Outer scales of the calyx ovate-lanceolate, like the leaves; inner bluntly ovate, tomentose. Florets all yellow, those of the ray narrow, linear, from an inch to an inch and half in length, with three sharp teeth at the end^b. Seeds columnar, four-cornered, obscurely striated, smooth, cinnamon-bay-coloured, with the rim of the umbilicus cartilaginous and white. Pappus, egret or down white, twice as long as the seed, appearing to be capillary^c; but when viewed with a glass, finely toothed on one side, shorter than the florets, sessile^d. Receptacle wide, smooth, hollow-dotted, or with very small angular holes scarce sensibly tooth-letted at the edge^e.

Native of Japan, Denmark, Germany, Flanders, Switzerland, Austria, France, Piedmont, Spain, and Britain. With us in Essex frequent, in Norfolk not uncommon, Mettingham in Suffolk, near Madingley in Cambridgeshire, Ripton and Warboys in Huntingdonshire, Dunstable and Pertenhall in Bedfordshire, side of Bredon-hill in Worcestershire, about St. Ives in Cornwall, &c. In Scotland it is a doubtful native.] It flowers in June and July, and the seeds ripen at the end of August.

[The root is esteemed a good pectoral, and a conserve of it is recommended in disorders of the breast and lungs, as good to promote expectoration. An infusion of it fresh, sweetened with honey is said to be an excellent medicine in the whooping cough. A decoction of it, applied outwardly, is said to cure the itch. Bruised and macerated in urine, with balls of ashes and whortle berries, it dyes a blue colour. A decoction of it cures sheep that have the scab^f; hence it is called in some counties *Scab-wort*: in others it has the name of *Horse-beale*^g, doubtless from its reputed virtues in curing the cutaneous diseases of horses. The officinal name is *Enula campana*, whence evidently our English *Elecampane* is derived. In German it is *Alant*, *Aland*, *Alantwurz*, *Olant*, *Oltwurz*, *Helenenkraut*, *Glockenwurz*, *der grosse Heinrich*. In Dutch, *Gerwoon Alant*, *Alantswortel*. In Danish, *Aland*, *Alandf-roed*, *St. Ellens roed*. In Swedish, *Alandfrot*. In French, *L'Inule aunée*, *l'aunée*, *l'Enule-campane*, *l'herbe contre la gale*. In Italian, *Enula*, *Enula campana*, *Ella*, *Elenio*. In Spanish and Portuguese, *Enula campana*, *Ala*. In Russian, *Dewjatschik*, *Dewesil*, *Oman*, *Krun*.

2. Stem simple, hairy. Leaves soft; root-leaves large; stem-leaves embracing; all very hairy above, beneath whitish. Flowers one or two, peduncled^b. The root is perennial, with an aromatic smell and taste; whence the trivial name.]

The stems are about two feet high, divided into several branches, with a few scattering yellow flowers,

^a Jussieu and Gærtner.^b Woodw. Mfs.^c Gærtner.^d Woodw. Mfs.^e Gærtner.^f Withering and Lightfoot.^g Gerarde.^h Lin. spec. syst. & mant.

which

- C. marimum tertium* Matthiolo, flore luteo Bupthalmi. *Baub. hist.* 2. 106. 3.
Leaves linear fleshy three-cusped.
- [24. *Inula provincialis*. *Oval-leaved Inula*.
Lin. spec. 1241. *Reich.* 3. 830. *Gouan illustr.* 68.
Hall. herb. n. 70. (*Solidago*). *Reich.*
Jacobæa rotundifolia incana. *Baub. pin.* 131. *prodr.* 69.
Leaves subserrate tomentose underneath, root-leaves petioled ovate, stem upright one-flowered.]
25. *Inula montana*. *Mountain Inula*.
Lin. spec. 1241. *Reich.* 3. 831. *Gouan hort.* 445.
Pollich pal. n. 808. *Villars dauph.* 3. 219. *Hall. herb. n.* 81. (*Aster*).
Aster montanus. *Allion. pedem. n.* 706.
Aster atticus luteus montanus villosus, magno flore.
Baub. pin. 267. *phytop.* 519. 11. *Tournef. inst.* 482.
Garid. aix. 47. *t.* 10.
A. angustifolius luteus. *Baub. hist.* 3. 1046. *v. n.* 22.
A. montanus hirsutus. *Lob. ic.* 350. *Raii hist.* 267. 7.
A. mont. lut. mas & femina. 3, 4. *Tabern. hist.*
Leaves lanceolate hirsute quite entire, stem one-flowered, calyx short imbricate.
- [26. *Inula æstuans*.
Lin. spec. 1236. *Reich.* 3. 831. *Plum. spec.* 10. *ic.* 41. *f.* 2. (*Aster*).
Helenium virgæ pastoris folio subtus incano & tomentoso. *Vaill. æst. par.* 1720. *p.* 302.
Leaves spatulate tomentose underneath.]
27. *Inula bifrons*.
Lin. spec. 1236. *Reich.* 3. 831.
Conyza pyrenaica, fol. primulæ veris. *Herm. parad.* 127.
C. latifolia viscosa, fl. aureo. *Garid. aix.* 125. *t.* 23.
C. præalta, caule alato, odorata. *Bocc. mus.* 1. 168. *t.* 121. *Raii suppl.* 153.
Leaves decurrent oblong toothletted, flowers heaped terminating subsessile.
- [28. *Inula cærulea*. *Blue-flowered Inula*.
Lin. syst. 767. *Reich.* 3. 832. *mant.* 471.
I. cernua. *Berg. cap.* 288.
Aster polifolius. *Lin. spec.* 1224. *Raii suppl.* 160. *n.* 29. *Vaill. æst. par.* 585. (*Asteropterus*).
Leaves decurrent obovate subserrate, stem suffruticose, flowers sessile terminating.
29. *Inula aromatica*. *Aromatic Inula*.
Lin. spec. 1241. *Reich.* 3. 832. *amoen.* 6. *afr.* 71.
Pluk. phyt. t. 326. *f.* 2.
Leaves linear quite entire tomentose scattered, stem shrubby.
30. *Inula pinifolia*. *Pine-leaved Inula*.
Lin. spec. 1241. *Reich.* 3. 832. *mant.* 472. *amoen.* 6. *afr.* 70.
Jacobæa æthiopica, laricis folio. *Breyn. cent.* 136. *t.* 64. *Mor. hist.* 3. *f.* 7. *t.* 18. *f.* 31.
Leaves subulate-linear three-sided clustered very much, stem shrubby.
31. *Inula foetida*. *Stinking Inula*.
Lin. spec. 1241. *syst.* 768. *Reich.* 3. 832. *Pallas. it.* 1. 40.
Solidago. *Lin. hort. cliff.* 410.
Conyza melitenensis, retusis foliis. *Bocc. sic. t.* 27. *Raii hist.* 264.
Leaves lanceolate-linear quite entire, corymbs branched, rays of the flowers very short.]
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32. *Inula canariensis*. *Canary Inula*.
Mill. dict. n. 12.
Aster canar. frutescens, folio tridentato crasso. *Hort. chelf.* 26.
Leaves linear fleshy three-cusped, stem shrubby.
33. *Inula fatureioides*. *Savory-leaved Inula*.
Mill. dict. n. 13.
Aster fatureiæ foliis conjugatis & pilosis, flore luteo. *Houst. Mfs.*
Leaves linear hirsute opposite, peduncles naked one-flowered.
34. *Inula fruticosa*. *Shrubby Inula*.
Mill. dict. n. 15.
Leaves lanceolate acute three-nerved underneath, calycine scales acute, stem shrubby.

which appear in july, but are rarely followed here by seeds.

[Native of the South of Europe, as Provence, Narbonne, Italy and Sicily. Ray observed it about Messina.—Mr. Miller cultivated it in 1759¹.

3. This has been confounded with the preceding, from which however it differs considerably. The root has no smell, but is acrid, and consists of a bundle of round dirty white fibres, issuing from a thicker head. Stem usually single, upright, round, purplish, villose, leafy, a foot and half high, branching only at top into few-flowered peduncles. Leaves oblong-lanceolate, acute, obscurely ferrate, wrinkled, deep green with very short hairs above, paler and veined with longer hairs beneath, the lower ones attenuated into the petiole, the upper ones sessile with some smell. Flowers sweet-smelling. Inner scales of the calyx erect and purplish, outer green short and reflex. Radial corollets shorter than the calyx and three-toothed. Anthers bristly. Seeds black with white cilia^k.

Native of the South of Europe, flowering from june to august. Cultivated by Mr. Miller in 1758¹.

4. Root perennial. The whole is hirsute. Stem a foot or eighteen inches high, upright, hard, stiff, hairy, dividing into two or three branches. Leaves narrow, three-nerved, very obscurely, if at all, ferrate; the lower subpetioled, alternate, lanuginose. Flowers in a corymb, of a fine yellow or golden colour, large but smaller than in the first sort. Corollets of the ray, three-toothed or sometimes quite entire^m.] Mr. Miller says, the flowers are small, and are in close clusters; these appear in july, but seldom perfect seeds in England.

[Native of Austria, the South of France and Silesia. Cultivated by Mr. Miller in 1759.]

5. Root perennial. Stem near two feet high, dividing in the upper part into two or three upright branches, or peduncles, each sustaining one pretty large flower, of a deep yellow colour. These are in beauty in july, but seldom ripen seeds here.

[It has the habit of *I. dysenterica*, but the stem is loftier and more upright; the leaves narrower, and finely ferrate. The variety β differs only in having the stem and under surface of the leaves more villose. The petals of the ray are very narrowⁿ.

It differs from the next following species, according to Krocker, in having a creeping root, the stem eighteen inches high, more diffused, round, jointed; the leaves four inches long, half an inch or even an inch in breadth, hispid about the edges; the flowers have the form of the Aster, are solitary, terminating, broader; the disk wider, the ray shorter, both of a golden colour.

Native of Germany, Scania, Siberia, Piedmont.—Cultivated by Mr. Miller in 1759^o.

6. Root perennial, creeping, whitish, the thickness of a goose quill, with largish fibres. Stem from one to two feet high, upright, round, firm, solid, striated, downy, branched more or less towards the top. Leaves alternate, set thickly together, spreading, oblong or lanceolate, obscurely toothed, embracing the stem with their arrowhead-shaped base, underneath tomentose or downy, above somewhat hirsute, of a dull green colour. Branches like the stem, upright, the latest growing to the greatest height. Flowers an inch or more in diameter, terminating, single or two together, forming all together a sort of corymb. Scales of the calyx numerous, awl-shaped, downy, frequently curved back at the end and coloured at the edge. Florets all yellow, exceedingly numerous in the disk, numerous also, close, linear, three-toothed in the ray. Bristles at the base of the anthers very minute. Seeds rough with short bristles, crowned with a sessile egret, of few simple rays, as long as the tube of the corollet. Receptacle rough with short stiff projecting lanceolate points^p.

Native of most parts of Europe, in moist meadows, watery places, by the sides of ditches, brooks and

rivers; flowering from july to october, and frequently over-running large tracts of land, generally left untouched by all sorts of cattle.

Ray observes, that the leaves when bruised smell like soap. Ratty informs us that the juice is saltish and warms the mouth a little, that the decoction is somewhat acrid in the throat, at the same time astringent and turning green with vitriol of iron; that the infusion is somewhat astringent, very bitter in the throat, and turning black with vitriol of iron.

Linneus in his *Flora Suecica* mentions his having been informed by General Keit, that the Russian soldiers, in their expedition against Persia, were cured of the bloody flux by the use of this plant, whence Linneus gave it the name of *dysenterica*^q. It is called by our old authors Middle Fleabane, and was supposed by its smoke in burning to chase away fleas and other insects. Forskal says it is named in Arabic *Rara ejub* or Job's-tears, from a notion that Job used a decoction of this herb to cure his ulcers; and it was formerly recommended in the itch and other cutaneous disorders.

7. This has been already described under Linneus's name of *Erigeron viscosum*. It is a native of the South of Europe, and was cultivated here in 1633, as appears from Johnson's edition of Gerarde's *Herbal*^r.

8. Stem a foot high, round, upright, subtomentose: branches five, alternate, very stiff and straight, rod-like, subdivided at the top. Leaves alternate, sessile, embracing, with the lobes of the base adnate downwards, waved without any apparent serratures, hoary beneath. Peduncles terminating, one-flowered, with a few leaflets scattered on them. Calycine leaflets awl-shaped, curved in at the tip. Ray of the corolla shorter, with numerous, linear petals, three-toothed or five-toothed; disk very convex. Flowers the same size with those of *Matricaria*.—Native of Egypt^s. Introduced in 1777 by Mons. Thouin. It flowers in july^t.

9. This is an annual plant, resembling the next sort, but larger and stiffer. Leaves somewhat rugged, sharp, naked above, subtomentose beneath. Peduncles many times as long as the flower, sometimes having a single leaf on them. Flowers like those of *I. Pulicaria*, but with a longer ray, and the calyx less hirsute.—Native of the East Indies^u.

10. This is an annual plant, with a very trailing stem; not at all hairy, and a globular calyx. What has been taken for the *Pulicaria* of Linneus by botanists of England and other countries is different, and now therefore made a distinct species. See the next following.

The variety is larger and more rigid, but still much smaller than ours^x.

Native of Scamia, where water stagnates in winter, and even in the streets of Lund^y.

11. Root annual, fibrous, whitish, jointed, generally crooked. Stem from a span to a foot in height, upright not prostrate, striated, crooked, often tinged with purple, much branched; branches alternate, like the stem. Leaves alternate; lower sessile, upper embracing, lanceolate, waved at the edges, slightly hairy and downy. Flowers terminating, numerous, broad, short, cylindrical, on single or branched leafy peduncles, the last blown standing considerably above the others. Scales of the calyx numerous, awl-shaped, downy, the lower ones spreading. Florets of the ray very short, three-toothed, often wanting. Bristles on the anthers very minute and much shorter than the filaments. Seeds almost linear, brown, smooth; crowned with a sessile egret of very few (about six, soon falling, *L.*) simple rays, shorter than the floret or seed^z.

Native of many parts of Europe, where water has stagnated during the winter, by road sides, on the borders of ponds, &c. particularly in a stiffish soil. It flowers from august to october.

Our plant always grows upright, and the upper part of the stem, the peduncles and leaves are woolly. The calyx is cylindrical, not globular^a.

¹ Hort. kew.

^k Jacquin.

¹ Hort. kew.

^m Krocker and Villars.

ⁿ Linn. spec.

^o Hort. kew.

^p Curtis, Woodw. Mss. Withering.

^q Curtis and Withering.

^r Hort. kew.

^s Linn. mant.

^t Hort. kew.

^u Linn. spec. & syst.

^x Withering.

^y Linn. suec.

^z Woodw. Mss. Curtis, Withering, Pollich.

^a Withering.

The *I. Pulicaria* of other European botanists seems to be the same with ours, and not Linneus's. The descriptions of Haller, Scopoli, Pollich, and Krocker agree very well with our plant; that of the last author particularly is excellent.

This also is said to drive away fleas and gnats, and is given by some to horses for the bots^b.

12. This resembles *I. Pulicaria* so much, that it should be distinguished from it with caution. The leaves are subspatulate, by no means embracing or waved. Calyxes cylindrical not globular, with approximating not squarrose scales. Peduncles longer, often in pairs. Ray of the corolla longer, disk narrower.—Native of the East Indies and Arabia^c.

13. The flowers of this are scarcely peduncled. It is a native of Italy^d.

14. Stem pubescent, striated, often one-flowered. Leaves somewhat rugged, naked, subserrate, more rugged about the edge. Flower large, terminating, sessile. Calycine scales lanceolate, the outer larger^e.

It is thus described by Gouan.—Root perennial. Stems several, a foot or eighteen inches high, (Miller says two feet, which may be true of garden plants) angular, striated, stiff, quite simple, rugged, tinged with red. Leaves rigid, scattered, hard, ferrulate and rugged at the edge. Peduncles terminating, in corymbs, one-flowered or two-flowered, leafy, rigid, swelling below the calyx. Calyxes very smooth, hard and squarrose: scales ovate, short, patulous with the tip curved back, ferrulate-ciliate, bluntish; the inner sharpish.] The flowers are pretty large, of a pale yellow colour, and appear in July, but are not followed by seeds in this country.

[In the autumn this plant puts on a different appearance: the stalk dies, and several young ones spring from the root, as in the seventh sort, weak, red, clammy-haired: leaves soft, ovate-lanceolate, clammy-pubescent, sessile, with a smell like Elder. The stem and leaves retain their pubescence through the winter; but in the spring they become bald, the lower leaves perish, and the stems are leafy only at top.

On account of this variety in the habit, it was long mistaken for *I. salicina*^f; which it resembles indeed, but has a stem rather round though striated, whereas in *I. salicina* it is angular: the leaves are smaller, firmer, shorter, with the end not sharp, as in the other; the notches unequal and a little less: the calyx has five rows of scales in that, but it has only two or three at most in this, ending sharply; in *I. salicina*, they are blunt, but awned: the radical florets are narrower and longer also in that than in this^g.

Native of Italy and the South of France. Cultivated in 1768, by Mr. Miller^h.

15. This whole plant has some smell and a bitter unpleasant taste. Root perennial, consisting of numerous long and thick fibres. Stems several, upright, a foot and half high, roundish, leafy, sometimes quite simple and terminated by a few peduncled flowers, sometimes putting forth from several leaves simple axillary branchlets. Leaves acute, alternate, the uppermost quite entire. The stem branches and leaves have villose hairs more or less conspicuous, but especially along the edges and midrib of the leaves. Calyx smooth, scales subovate, the lowest leafy, all except the inmost spreading squarrosely at the tip. Radial corollets sharply and minutely three-toothed. Anthers bristly. Seeds linear, brown, striated; crowned with a hairy, sessile down, appearing villose to the magnifier.

Native of Austria; flowering in August and Septemberⁱ.

16. Root perennial, aromatic, subastringent, smelling like cinnamon. Stem from a foot to two and even three feet in height, upright, smooth, hard, firm, tinged with red, grooved or angular towards the top, where it is usually branched. Leaves alternate, sessile or half-embracing, stiff, smooth, of a dark shining green, very slightly cut and somewhat rugged about the edge. Flowers terminating, on alternate, one-flowered,

grooved, reddish peduncles, forming all together a corymb. Calycine scales in two rows, smooth, brown, lanceolate, curved back a little at the end. Flower an inch in diameter. Radial florets three-toothed. Down of the seed white sessile^k.

It differs from the next species in having the stem smooth, grooved or angular at top; and the leaves smooth except that the edge is rugged^l.

Native of Germany, Switzerland, Austria, and the South of France.—Cultivated in 1683 by Mr. James Sutherland^m.

17. This has the habit of the preceding, but the leaves are broader, blunter, scarce apparently ferrate, veined, rugged especially on the edge and along the keel, and rough on both sides with a subrufous woollyness. The stem has leaves and stiffish hairs scattered over it, and is entirely round, not grooved and angular. The calyx is also as it were leafy.

Linneus suspects that Seguiet's plant (*ver. 2. 211.*) referred to here under *I. squarrosa*, may be the same with this, on account of the similitude in the calyxesⁿ.

Villars says, that none of Linneus's synonyms accord with this species, he thinks however that the *hirta* of that author is the same with his plant, because they both resemble *I. salicina*, and the leaves are rugged and almost entire. He thus describes it.—Stem simple, round, slightly villose, a foot high, terminated by two or three flowers, each on a separate peduncle. Leaves a little resembling those of *I. salicina*, but wider, whitish, villose and more rugged on the edge. Calycine scales a little villose, rugged, curved outwards, in about two rows. Ray of the flower shorter and narrower than in *I. salicina*, and of a paler colour.

Pollich describes the root as thick and fibrous. Stem upright, a foot or eighteen inches high, round, angular, subpubescent, branched. Leaves alternate, embracing, entire but commonly crenate, four inches long and half an inch wide, soft, pubescent, pale green, hanging down. Branches or peduncles three or four, short, one-flowered, terminating. Calycine segments linear, narrow, turned back a little from the middle to the top, four lines long and a quarter of a line wide, pubescent and soft. Flowers handsome, an inch and half in diameter.

According to Krocker, it differs from the preceding, in having longer, broader, blunter leaves, scarce apparently ferrate, hirsute, rugged especially at the edge and along the keel. Stem wholly round with stiffish leaves and hairs, and higher. Calycine scales wider, the outer ones leafy, lanceolate, green. It differs from *I. dysenterica* in having a higher stem, the lower flowers standing above the upper ones, the calycine scales as above described, and the whole habit less tomentose and less white.

Native of France; Germany, Switzerland, Austria, Siberia.—Cultivated in 1759, by Mr. Miller; and flowering here from June to September^o.

18. The whole plant has soft white hairs thinly scattered over it, especially the lower surface of the leaves. The flowers terminate the stem in a sort of corymb, but the peduncles or branches are commonly one-flowered, with pedicelled glands scattered over them^p.]

It rises with a strong stalk about a foot and half high, pretty closely set with prickly hairs. Leaves about three inches long, and near one inch broad in the middle. Towards the upper part of the stalk there are single flowers coming out from the axils at each joint, and the stalk is terminated by a cluster of small yellow flowers. It flowers in August, but has not perfected seeds in England.

Native of Maryland and Carolina. The seeds were sent to Mr. Miller from South Carolina (in the Dictionary he says Maryland) in the year 1742, by his late friend Dr. Thomas Dale, which succeeded in the Chelsea garden, where the plants flowered the following year; but the season proving too cold to ripen the

^b Krocker.

^c Linn. syst.

^d Linn. mant.

^e Gouan. illustr.

^f Linn. spec.

^g Allioni.

^h Hort. kew.

ⁱ Jacquin.

^k Krocker, Pollich, Villars.

^l Hort. kew.

^m Hort. kew.

ⁿ Linn. spec.

^o Linn. spec. & syst.

^p Linn. spec.

seeds, and the plants being biennial, they perished in winter.

19. This bears much resemblance to *I. salicina*, particularly in the leaves, which however are shorter; the peduncles are more numerous and lengthened. The flowers are cylindrical, and clustered at the top of the stalk into a corymb. But the principal difference, according to Mons. Villars, is in the calyx; which is almost oval, lengthened, and composed of three rows of scales curved outwards at their upper extremity¹.

Pollich describes the stem as upright, a foot or eighteen inches high, round, pubescent, somewhat rugged, a little branched at top and curved towards the bottom. Leaves alternate, half embracing, ovate-lanceolate, sharpish, quite entire, pubescent, rugged all over but especially at the edge, veined. Flowers small, terminating in a sort of close umbel. Calyx cylindrical, the lower scales lanceolate, spreading, the rest turned back a little at the top only.

Native of the South of France, Germany, Austria, Siberia.]

Mr. Miller says it grows between three and four feet in height: that the leaves are turned backward, are indented on their edges, and rough on their upper side; that it flowers in june, and the seeds ripen in autumn.

[20. Stem herbaceous, round, striated, villose, upright, a foot high and more. Leaves elliptic, with minute remote toothlets, villose, pale beneath, netted, the lower ones longer, two inches in length. Peduncles filiform, alternate from the upper part of the stem, upright, tomentose. Calyxes ovate, villose, linear-awl-shaped, patulous.

Native of Japan.

21. Stem herbaceous, simple, striated, villose as is the whole plant, flexuose-erect, a foot high, leafless at top. Root-leaves several, subpetioled or attenuated into broad petioles: stem-leaves sessile, alternate; all oblong, villose, ciliate; the upper ones small. Flower terminating, solitary. Calyx very hirsute, equal².

Thunberg having only once had specimens of this, and these not very good ones, the genus yet remains doubtful; but it seems to approach nearest to the *Inulas*.

Native of Japan.

22. Root perennial. Stems annual, from six inches to a foot in height, some one-flowered, others branched and few-flowered from the upper axils, almost smooth, when cultivated somewhat lanuginose at bottom. Leaves ensiform, sometimes approaching to narrow-lanceolate, rigid, flat, shining, very finely serrulate. The flowers have a little smell. Scales of the calyx somewhat villose, ending in a narrow-lanceolate sharp and very spreading leaflet, which is longer in the outer ones; the inmost scales have it not, and are pale green with brown tips and upright. Radial florets three-toothed. Anthers two-bristled. Seeds brown, with a down five times its length, toothletted with the magnifier.

Native of Austria, on rocks among bushes, flowering in august³.

23. Root perennial. Stems firm, smooth, striated, much branched; branches clothed with linear leaves, either three-toothed or entire at the extremity; they are crowded at the ends of the branches. (According to Withering, the lower leaves have teeth at the end, and sometimes a few at the sides; the upper ones are entire.) Flowers solitary, on thick peduncles, at the summit of the upper branches. Calycine scales numerous, yellow-greenish, fleshy, awl-shaped. Seeds villose, crowned with a sessile egret shorter than the florets, composed of few rays, when viewed with a glass finely toothed on one side⁴.

Native of England, France, Spain, Portugal, the coasts of the Mediterranean Sea, Barbary, &c. and Arabia: in salt-marshes, in a muddy soil.] Mr. Miller says, he has observed it plentifully near Sheerness, in the isle of Shepey, in Kent: [where Gerarde, Ray and other had seen it before. Ray remarked it in a marsh near Hurst-Castle over against the Isle of Wight,

¹ Linn. spec. & Villars dauph. ² Thunberg. ³ Jacquin. ⁴ Woodw. Mss.

and on the rocks at Llandwyn in Anglesea. Mr. Newton found it on the bank of the river just above Fulbridge at Malden in Essex.]

According to Mr. Miller, it rises with an upright stalk a foot and half high. Leaves succulent, fleshy, an inch and quarter long and one-eighth of an inch broad, ending in three points, and coming out in clusters. It flowers in july, and the seeds ripen in autumn.

The younger branches are frequently sold in the London markets for Sampire; but this is a great abuse, because this plant has none of the warm aromatic taste of true Sampire (*Crithmum maritimum*.)

Vahl affirms, that the *Senecio succulentus* of Forskahl agrees in all respects with the specimens of *Inula crithmoides* collected on the coasts of the Mediterranean, and that in Barbary the stems are constantly perennial. He describes the stem as shrubby (*fruticulosis*), round, procumbent at the base, branched at bottom; the branches scattered and spreading. Leaves smooth, broader towards the top, the upper ones quite entire, the lower with a tooth on each side at the tip. Peduncle at the end of the branches, one-flowered, elongated, with minute linear scattered scales. Anthers two-bristled. Egret ferruginous-purplish.

24. This plant has strong fibres to the root. Stem a foot high, quite simple, villose. Root-leaves bluntly ferrate, villose underneath, bluntish; stem-leaves few, lanceolate, sessile, less ferrate, villose underneath; the upper ones linear. Flowers rather large⁵.

According to Gouan it is not unlike *Senecio incanus*, being hoary all over. Root-leaves petioled, from half an inch to an inch in length, blunt, ovate, quite entire; others crenate, and others again pinnatifid, with three or four pinnules on each side. Stem an inch, two inches, or a hand high. Stem-leaves alternate, one to four, linear, hoary, quite entire or pinnatifid. Flower large. Calyx tomentose-hoary. Peduncle swelling below the flower.

Haller says it is a handsome plant, with a woody root having abundance of fine fibres. Root-leaves thick, solid, white-tomentose on both sides, some ovate, round, toothed, others twice, thrice or four times gashed, or pinnatifid; the pinnules roundish. Stem-leaves pinnatifid and simple. Stem not branched, naked, half a foot high, one-flowered. Flower an inch in diameter, spreading. Calyx tomentose, leaflets straight, lanceolate, in three rows. Radial florets about fourteen, three-toothed.

Haller refers the synonym of Bauhin, here given, to *Senecio Doronicum*.

Native of the South of France, where it was found about Narbonne by Pech on the Corbieres a part of the Pyrenees. Also in the Uppet Valais, and in the mountains of Piedmont by Allione.—It was introduced here in 1778, by Mons. Thouin, and flowers in july and august⁶.

25. Root hard, fibrous. Stem a long span or a foot high, round, firm, upright. Leaves thickish, green above, subhirsute and wrinkled; beneath silky-tomentose, root-leaves petioled, elliptic, stem-leaves few, lanceolate, acute. Flower large. Calycine scales broad, tomentose, lanceolate, with the tips bent back. Florets of the disk very numerous, of the ray as far as thirty, broad, three-toothed⁷.

The stem is a foot or eighteen inches in height, according to Pollich, hairy, rugged, grooved or subangular, commonly not branched, but the branches, when there are any, alternate. Leaves alternate, sessile, from upright spreading, suboblique, bluntish, pale green, rugged. Flower subsessile, handsome, an inch and more in diameter. Calycine leaflets loose, lanceolate, ciliate, hairy, rugged, from upright spreading.

Villars says, it is lower than the preceding sorts. The stem half a foot long, inclined at the base. Lower leaves oblong, blunt, russet, villose; stem-leaves linear.

It varies with subserrate leaves, and small flowers: and when cultivated long in a garden, the leaves become wide, like those of *Verbascum*, and the stem higher, straighter, terminated by four or five flowers.

⁵ Linn. spec.

⁶ Hort. kew.

⁷ Haller.

Allione remarks, that the leaves are not quite entire, but somewhat toothletted; and that the stem is not always one-flowered, but has sometimes two and three flowers.

Linneus observes, that the calyx and structure of the plant makes it very nearly allied to the Aster; and that it is covered with a snowy white pubescence.

Native of Spain and the country about Montpellier and Vienna. In all the southern part of Dauphiné. Near Turin, and in other parts of the King of Sardinia's dominions. In the vineyards of the Palatinate. In Switzerland and the Valais.—Cultivated in 1759, by Mr. Miller. It flowers in July and August^a;] but rarely ripens seeds here.

[26. Native of South America.

27. Stem a foot high, somewhat rigid, corymbed, with a strong smell like Tansey. Flowers yellow, with a short ray. Biennial. Compare *Conyza bifrons*, which botanists determine to be the same plant without any ray to the flower^a.]

Mr. Miller describes it as a foot high, dividing into many branches. Leaves oval, hairy, half-embracing. Each branch is terminated by one large yellow flower, with the scales of the calyx oval. It flowers in July and August, but never perfects seeds in this country.

[Native of Italy, Provence, and the Pyrenees. Cultivated by Mr. Miller in 1768.

28. Though this has a blue ray to the flower, in which it differs from all the Inulas, yet its appearance or habit is quite foreign to that of the Asters. The branches are one-flowered. The anthers are tailed, as in most of the Inulas. The receptacle is honey-combed^b.

Native of the Cape of Good Hope.

29. Branches alternate, crowded, simple. Leaves alternate, crowded, curved back at the edge. Flowers solitary, terminating, sessile. Calyxes oblong, imbricated. Ray of the flower pale whitish flesh-colour.

30. This is a rugged shrub, having the appearance of a Larch, with rod-like branches. Leaves mucronate, smooth. Flowers subsolitary, sessile, terminating. Egret simple^c.

Stem half a foot high, very rugged with the fallen leaves, like the Fir, with the branches in whorls. Leaves scattered, green. Scales of the calyx linear^d.—Both natives of the Cape.

31. This is allied to *Senecio foetidus*, with the habit of *Cineraria*^e. In Linneus's species it is said very much to resemble *Erigeron foetidus*, except that it has radiate flowers. In the Mantissa it is said to bear a great affinity to the genus *Cynara*.

Boccone, who first discovered this plant among the rocks of the island of Malta, thus describes it.—Stems several, a foot high, straight, branched, rough with harsh hairs. Leaves also hirsute, alternate, oblong, undivided, not unlike those of Hyssop or the Olive, blunt at the end. Flowers golden-coloured.]

32. This rises with several shrubby stalks near four feet high, which divide into smaller branches. Leaves in clusters, narrow, fleshy, divided into three segments at their points. The flowers come out on the side of the branches at the top of the stalks; they are small, and of a pale yellow colour, appearing in August.

Native of the Canary islands. Cultivated by Mr. Miller.

33. This rises with a shrubby stalk about two feet high, dividing into many smaller branches, which are hairy. Leaves narrow, stiff, sessile; from the edges of these arise long hairs, which are stiff, and come out by pairs; at the end of the branches arise naked peduncles, four or five inches long, sustaining one small, yellow, radiated flower. It was discovered by Dr. Houstoun at La Vera Cruz; and was cultivated by Mr. Miller before 1733.

34. Stem ten or twelve feet high, divided into several woody branches. Leaves five inches long, and one inch and a half broad in the middle, smooth on the upper side, but on their under having three longitudinal veins. The flowers are produced at the end of the

branches, having very large scaly calyxes; they are as large as a small Sun-flower, of a pale yellow colour. It was discovered by Dr. Houstoun at Carthage in New Spain; and was cultivated by Mr. Miller before 1733.

PROPAGATION AND CULTURE.

1. Common Elecampane may be propagated by seeds, which should be sown in autumn soon after they are ripe; for if they are kept till the spring, they seldom grow; but where they are permitted to scatter, the plants will come up the following spring without any care, and may be either transplanted the following autumn; or if they are designed to remain, they should be hoed out to the distance of ten inches, or a foot each way, and constantly kept clean from weeds; these roots will be fit for use the second year.

But most people propagate the plants by offsets, which, if carefully taken from the old roots, with a bud, or eye, to each, will take root very easily; the best time for this is the autumn, as soon as the leaves begin to decay; these should be planted in rows about a foot asunder, and nine or ten inches distance in the rows; the spring following the ground must be kept clean from weeds, and if in autumn it is slightly dug, it will promote the growth of the roots; these will be fit for use after two years growth, but the roots will abide many years, if they are permitted to stand; however, the young roots are preferable to those which are old and stringy. It loves a gentle loamy soil, not too dry.

2 to 5. 16, 17, 18, 19. 22. 24. 25. are abiding plants, which will thrive and flower in the open air in England; they may be all propagated by parting of their roots. The best time for doing of this is in autumn, at which time the plants may be removed; these may be intermixed with other flowering plants in the borders of large gardens, where they will make an agreeable variety during their continuance in flower. As these roots multiply pretty fast, they should be allowed room to spread, therefore should not be planted nearer than two feet from other plants; and if they are removed every third year, it will be often enough, provided the ground between them is dug every winter, and, in summer, if they are kept clean from weeds, they will require no other care.

As some of these sorts produce good seeds in England, they may be propagated by sowing of the seeds in the autumn, on a border of light earth exposed to the east, where the morning sun only is admitted; and in the spring, when the plants appear, they should be kept clean from weeds till they are fit to remove, when they should be transplanted on a shady border, six inches asunder, observing to shade and water them till they have taken new root: and during the summer season they should be kept clean from weeds, and in autumn they may be transplanted into the borders where they are to remain.

[6. 10, 11. 23. Being natives of Europe, and common, are not cultivated in gardens.

7. See *Erigeron viscosum*.

8, 9, 12. Being annual plants, and natives of hot countries, must be propagated by seeds raised in a hot-bed, and kept in the bark-stove.]

13, 14, 15. 27. are propagated by seeds, which should be sown on a bed of light earth early in the spring; in May the plants will appear, which should be kept clean from weeds till they are fit to transplant, when they should be planted in an east border, at about six inches distance each way, watering and shading them till they have taken new root; after which they will require no other culture but to keep them clean from weeds till the autumn, when they should be planted where they are designed to remain.

The fourteenth seldom continues above two or three years, and therefore young plants should be constantly raised from seed to succeed the old ones.

[28. 29, 30. Being shrubby Cape plants, may be increased by cuttings, and must be preserved in the dry stove.]

32. The thirty-second sort will not live abroad in the open air in England, during the winter season, so must be removed into shelter in autumn, but should have

^a Hort. kew.

^a Linn. spec.

^b Berg. & Linn. syst.

^c Linn. amoen.

^d Linn. mant.

^e Linn. syst.

as much free air as possible at all times, when the weather is mild, otherwise it is apt to draw up weak. In cold weather the plants must have very little water, for their stalks and leaves being succulent, they are very apt to rot with too much wet; in summer they should be placed abroad with other hardy exotic plants in a sheltered situation, where they will add to the variety, though they are plants of no great beauty, and seldom flower in England, unless the summer is very warm. This is easily propagated by cuttings, any time in summer, which, if planted in a shady border, will take root in a short time.

33. This is propagated by cuttings during the summer season, which must be planted on a bed of light earth, and shaded till they have taken root; after which the plants must be treated in the same manner as other hardy exotics, sheltering them from frost in winter.

34. This being too tender to live in the open air in England, must be constantly kept in the bark stove. It is propagated by seeds, which must be procured from the country where it naturally grows, for it does not produce any here; these must be sown upon a hot-bed, and when the plants are fit to remove, they should be each put into a small pot filled with light earth, and plunged into a fresh hot-bed; treating them in the same manner as other tender plants from the same country.

[INULA. See *Percidium*.

INULOIDES. See *Conyza*.

JOB'S-TEARS. See *Coix*.

JOHNSONIA. See *Callicarpa*.

JOINTED GLASS-WORT. See *Salicornia*.

IOLITHUS. See *Byssus*.

JONCQUETIA. (So named in memory of Denis Joncquet. He published a catalogue of his own garden, under the title of Hortus, f. Index Plantarum, quas colebat a. 1658 & 1659. 4°.)

Lin. gen. Schreb. n. 785. Tapirira. Aubl. t. 188.

Class. 10. 4. Decandria Tetragynia.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets roundish; deciduous.

COR. Petals five, roundish, concave, spreading, longer than the calyx.

STAM. Filaments ten, shorter than the corolla, growing to a glandule. Anthers roundish.

PIST. Germ pentagonal, surrounded by a glandule. Styles none. Stigmas five.

PER. Capsule nearly globose, roundish-pentacoccus, one-celled, five-valved.

SEEDS five, ovate, arillated, each affixed to the valves.

ESSENTIAL CHARACTER.

Cal. five-leaved. Pet. five, spreading. Filam. growing to a glandule. Styles none. Caps. subglobular, one-celled, five-valved, five-seeded.

SPECIES.

1. *Joncquetia guianensis*.

Aubl. guian. 1. 470. t. 188. (Tapirira).

DESCRIPTION, &c.

This is a very large tree, with a trunk forty or fifty feet high, and two or three feet in diameter, with a smooth russet bark, and a white uncompact wood. It has a great number of branching boughs at top, those in the middle erect, the rest horizontal and spreading in all directions. Leaves alternate, unequally pinnate; leaflets in three, four or five pairs, almost but not quite opposite, smooth, thin, entire, oval, acuminate; the largest six inches in length, and two inches and a half in width, the lower ones of each leaf smaller. Petiole almost cylindric, eight or nine inches long, thick and fleshy at the base. Flowers small, numerous, white, axillary and terminating, in large wide scattered panicles.

Native of Guiana, where it is called Tapiriri. It flowers in november, and bears fruit in april.

JONDRABA. See *Biscutella*.

JONQUILL and JONQUILLA. See *Narcissus*.

JONTHLASPI. See *Alyssum* and *Clypeola*.

[IPECACUANHA. See *Viola*.]

Aublet.

IPOMOEIA. (From $\text{I}\psi$, ipos , *Convolvulus*, and $\text{o}\mu\text{o}\iota\text{o}\varsigma$, *similitudo*: from its similitude to the *Convolvulus*.)

Lin. gen. n. 216. Reich. 232. Schreb. 288.

Gertn. t. 134, 178. Juss. 134. Quamoclit.

Tournef. 39. Volubilis. Dill. elth. 318.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Campanaceæ*.—*Convolvuli*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-toothed, oblong, very small, permanent.

COR. one-petalled, funnel-form. Tube subcylindric, very long; border five-cleft, spreading; divisions oblong, flat.

STAM. Filaments five, awl-shaped, almost the length of the corolla. Anthers roundish.

PIST. Germ roundish. Style filiform, length of the corolla. Stigma headed-globose.

PER. Capsule roundish, three-celled.

SEEDS some, subovate.

OBS. This genus is rather too nearly allied to *Convolvulus*; but differs in the lengthened tube of the corolla, and the headed stigma.

ESSENTIAL CHARACTER.

Cor. funnel-form. Stigma headed-globose. Caps. three-celled.

SPECIES.

* Flowers distinct.

1. *Ipomoea Quamoclit*. Winged-leaved *Ipomoea*.

Lin. spec. 227. Reich. 1. 448. hort. upf. 39. cliff. 60.

f. zeyl. n. 77. Lour. cochinch. 111. Mill. fig.

t. 214. (Quamoclit). Curt. magaz. t. 244. Brown.

jam. 155. 1. Sabb. hort. 1. t. 85.

Quamoclit. Camer. hort. 135. Baub. hist. 2. 177.

Raii hist. 730. Ger. emac. 1598.—f. *Jasminum*

americanum. Clus. cur. post. 4. t. 5.—fol. tenuiter

incisis & multifidis. Tourn. inst. 116. Burm. zeyl.

197.

Convolvulus pennatus exoticus rarior. Col. aquat. 73.

t. 72. Mor. hist. 2. 18. f. 1. t. 4. f. 7.—*tenuifolius*

americanus. Park. parad. 358. n. 3.

Jasminum millefolii folio. Baub. pin. 398.

Alterum genus *Gelsemini* rubri. Casalp. 134.

Flos *Cardinalis*. Rumph. amb. 5. 421. t. 155. f. 2.

Tsjuria-cranti. Rheed. mal. 11. 123. t. 60.

Leaves pinnatifid linear, flowers subsolitary.

[2. *Ipomoea rubra*. Upright *Ipomoea*.

Lin. syst. 204. Reich. 1. 448.

Polemonium rubrum. Lin. spec. 231.

Quamoclit pennatum, &c. Dill. elth. 321. t. 241.

f. 312.

Leaves pinnatifid linear, flowers in racemes pendulous.

3. *Ipomoea umbellata*. Umbelled *Ipomoea*.

Lin. spec. 227. Reich. 1. 449. Plum. spec. 3. ic. 92.

f. 2. (Quamoclit).

Leaves digitate in sevens, peduncles umbelled very short.

4. *Ipomoea carolina*. Carolina *Ipomoea*.

Lin. spec. 227. Reich. 1. 449. Catesb. car. 2. t. 91.

(*Convolvulus*).

Leaves digitate, leaflets petioled, peduncles one-flowered.]

5. *Ipomoea coccinea*. Scarlet-flowered *Ipomoea*.

Lin. spec. 228. Reich. 1. 449. hort. upf. 39. cliff.

66. Swartz obs. 65. Curt. magaz. 221. Sauv.

meth. 114. Brown. jam. 155. 3.

Quamoclit americana, folio *hederæ*, flore coccineo.

Comm. rar. t. 21.

Convolvulus cocc. fol. anguloso. Plum. amer. 89.

t. 103. Raii suppl. 380.

Leaves cordate acuminate angular at the base, peduncles many-flowered.

[6. *Ipomoea lacunosa*. Starry *Ipomoea*.

Lin. spec. 228. syst. 204. Reich. 1. 449.

Convolvulus stellatus, periplocæ rotundioris folio. Dill.

elth. 103. t. 87. f. 102.

C. carolinianus, flore parvo singulari, &c. Raii suppl.

app. 243. n. 65.

Scammonia rotundifolia virginiana. Park. theat. 164.

n. 5.

Leaves cordate acuminate scrobiculate angular at the base, peduncles one or two-flowered shorter than the flower.]

7. *Ipomoea solanifolia*. Nightshade-leaved *Ipomoea*.

Lin. spec. 229. Reich. 1. 449.

Quamoclit

- Quamoclit folani folio, flore roseo. Plum. spec. 3. ic. 94. f. 1.*
Leaves cordate acute quite entire, flowers solitary.
8. *Ipomoea tuberosa. Tuberous-rooted Ipomoea.*
Lin. spec. 227. syst. 204. Reich. 1. 450. hort. ups. 39. Jacqu. obs. 1. 39. amer. pict. 20. Lour. cochinch. 112. Brown. jam. 155. 6. Sloan. jam. 1. 152. t. 96. f. 2. Pluk. phyt. t. 276. f. 5. (Convolvulus).
Leaves palmate, lobes in sevens lanceolate acute quite entire, peduncles three-flowered.
9. *Ipomoea digitata. Hand-leaved Ipomoea.*
Lin. spec. 228. Reich. 1. 450.
Quamoclit fol. digitatis, flore coccineo. Plum. spec. 3. ic. 92. f. 1.
Leaves palmate lobes in sevens lanceolate blunt, peduncles three-flowered.
- [10. *Ipomoea bona nox. Prickly Ipomoea.*
Lin. spec. 228. Reich. 1. 450. hort. cliff. 496. Gært. fruct. 2. 247. Brown. jam. 155. 2. Sloan. jam. 1. 151. t. 96. f. 1. Pluk. phyt. t. 276. f. 3. (Convolvulus).
Smilax aspera Indiae occidentalis. Baub. pin. 296.
Leaves cordate acute quite entire, stem prickly, flowers in threes, corollas undivided.
11. *Ipomoea campanulata. Bell-flowered Ipomoea.*
Lin. spec. 228. Reich. 1. 450. Rheed. mal. 11. 175. t. 56.
Leaves cordate, peduncles many-flowered, outer perianth orbicular, corollas bell-shaped lobed.]
12. *Ipomoea violacea. Purple-flowered Ipomoea.*
Lin. spec. 229. syst. 205. Reich. 1. 451. Sauv. monsp. 114. Sloan. jam. 1. 154. t. 98. f. 1. (Convolvulus).
Quamoclit fol. amplissimis cordiformibus. Plum. spec. 3. ic. 93. f. 1.
Leaves cordate quite entire, flowers crowded, corollas undivided.
- [13. *Ipomoea verticillata. Whorl-flowered Ipomoea.*
Vahl symb. 3. 33. Forsk. descr. 44.
Leaves cordate, peduncles axillary in threes reflex, calyxes bispid.
14. *Ipomoea carnea. Flesh-coloured-flowered Ipomoea.*
Lin. spec. 1668. syst. 205. Reich. 1. 451. Jacqu. amer. 26. t. 18. pict. 19. t. 25.
Leaves cordate smooth, peduncles many-flowered, corollas margined.
15. *Ipomoea repanda. Repand-leaved Ipomoea.*
Lin. spec. 1668. syst. 205. Reich. 1. 451. Jacqu. amer. 28. t. 20. pict. 20. t. 27.
Leaves cordate oblong repand, peduncles branched in cymes.
16. *Ipomoea filiformis.*
Lin. syst. 205. Jacqu. amer. pict. 20. t. 26.
Leaves cordate blunt with a point quite entire, peduncles in racemes filiform.
17. *Ipomoea hastata. Halbert-leaved Ipomoea.*
Lin. syst. 205. Reich. 1. 451. mant. 204. Burm. ind. 150. t. 18. f. 2.
Leaves sagittate-hastate, peduncles two-flowered.
18. *Ipomoea sanguinea. Bloody-flowered Ipomoea.*
Vahl symb. 3. 33.
Leaves cordate three-lobed, side-lobes angular and sub-lobed behind, peduncles three-flowered, calyxes smooth.
19. *Ipomoea glaucifolia. Glauous Ipomoea.*
Lin. spec. 229. Reich. 1. 451. hort. cliff. 67.
Convolvulus stellatus arvensis, folio glauco. Dill. elth. 103. t. 87. f. 101.
Leaves sagittate truncated behind, peduncles two-flowered.]
20. *Ipomoea triloba. Three-lobed Ipomoea.*
Lin. spec. 229. Reich. 1. 451. Thunb. jap. 86. Kämpf. amoen. 5. 856.
Leaves three-lobed cordate, peduncles three-flowered.
- [21. *Ipomoea parviflora. Small-flowered Ipomoea.*
Vahl symb. 3. 34. Sloan. jam. 1. 153. t. 97. f. 1.
Leaves cordate five-lobed palmate, umbels axillary peduncled, calyxes and capsules hairy.
22. *Ipomoea hederifolia. Ivy-leaved Ipomoea.*
Lin. spec. 229. Reich. 1. 452.
Quamoclit hederæ folio trifido. Plum. spec. 3. t. 93. f. 2.
Leaves three-lobed cordate, peduncles many-flowered in racemes.]

** *Flowers aggregate.*

23. *Ipomoea hepaticifolia. Hepatica-leaved Ipomoea.*
Lin. spec. 230. syst. 205. Reich. 1. 452. Fl. zeyl. n. 79. Lour. cochinch. 112. Burm. ind. 50. t. 20. f. 2. Herm. lugdb. 182. prodr. 327. (Convolvulus).
Leaves three-lobed, flowers aggregate.
- [24. *Ipomoea tannifolia. Black-Bryony-leaved Ipomoea.*
Lin. spec. 230. Reich. 1. 452. Dill. elth. 423. t. 318. f. 410. (Volubilis).
Leaves cordate acuminate hairy, flowers aggregate.
25. *Ipomoea Pes tigridis. Palmated Ipomoea.*
Lin. spec. 230. Reich. 1. 452. Fl. zeyl. n. 78. Herm. lugdb. 184. t. 187. Act. bonon. 11. p. 2. 362. t. 23. f. 2. (Convolvulus). Dill. elth. 429. t. 318. f. 411. (Volubilis). Rheed. mal. 11. 121. t. 59.
Leaves palmate, flowers aggregate.

26. *Ipomoea simplex. Entire-leaved Ipomoea.*
Thunb. prodr. cap. 36.
Leaves lanceolate entire, flowers solitary.

27. *Ipomoea zeylanica. Ceylonese Ipomoea.*
Gært. fruct. 2. 482.
Floral leaflets under each calyx one, lanceolate sessile, permanent, three times as long as the calyx.]

DESCRIPTIONS, &c.

1. This is an annual plant, rising with two oblong pretty broad seed-leaves, which remain a considerable time before they fall off. Stems slender, twining, and rising by support to the height of seven or eight feet; sending out several side-branches, which twine about each other and the principal stem, and about any neighbouring plants. The leaves are composed of several pairs of very fine narrow lobes, not thicker than fine sewing thread, about an inch long, of a deep green, either opposite or alternate. The flowers come out singly from the side of the stalks, on slender peduncles about an inch long. The tube of the corolla is about the same length, narrow at bottom, but gradually widening to the top; where it spreads open flat, with five angles; it is of a most beautiful scarlet colour, and makes a fine appearance.

[Loureiro affirms that the capsule is usually four-celled, which perhaps may be owing to his having seen it only in a state of luxuriance from cultivation; for he does not say that he observed it wild in China and Cochinchina.

Browne says it is cultivated in many of the gardens of Jamaica, on account of its beautiful flowers, and minutely dissected thick foliage, that it is a weakly climber, and seldom rises above four feet from the ground. He gives it the name of *American Jessamine*.] Mr. Miller says it is called in the West Indies *Sweet William*, and by some *Indian Pink*. The flowers appear in July and August, and continue in succession great part of September. He says it grows naturally in both Indies, and that in the West India islands it runs up the hedges to a considerable height. [It is certainly a native of the East Indies, whence it was probably transported to the West Indies, of which it does not seem to be aboriginal.

Cæsalpinus first (1580) gave a short description of this plant, as then newly arrived from India, under the name of *Gelsemium rubrum alterum*; next to him, Camerarius gave a figure and description of it, by the name of *Quamoclit*; and Columna, following Camerarius, described and figured it more accurately.—Our old authors regarded it as a native of America, and Parkinson calls it, *The red Bell-flower of America*. He says, (1629) “it is a rare plant, that we seldom have, and can hardly keep, that it perishes every year, and with us will seldom come to flower, because our cold nights and frosts come so soon, before it can have comfort enough of the sun to ripen it.” Johnson, in the appendix of his edition of Gerard’s *Historie of Plants* calls it *Winged Binde-weed*, and gives a figure from Clusius’s *curæ posteriores*, with a description borrowed from Columna. He says, “it is so tender a plant, that it will not come to any perfection with

^a Ray hist. and Ger. emac.

"us, unless in extraordinary hot years, and by artificial helps. By reason of the great plenty of leaves and flowering stalks or branches winding themselves about artificial hoops, crossings, or other fashioned works of reeds, or the like, set for winding herbs to climb upon, it much delights the eye of the beholder, and is therefore kept in pots, in gardens of pleasure."

2. The young plants, the first year, produce numerous leaves, spreading in a circle, elegantly jagged, somewhat like the finer ones of *Coronopus*, or Buck's-horn Plantain; from the centre of these, the second year, arises a straight stem, simple or unbranched below, but having several branchlets on the upper part; it is the thickness of a wheat straw at bottom, and three quarters of a yard or more in height; it is clothed from top to bottom with leaves, resembling those of *Hottonia*, and placed alternately; the lower ones broader, longer, and divided into more segments; which are fewer and more finely cut the nearer they are to the top. Flowers from the top of the stem, and the ends of the side branchlets, peduncled, pendulous, usually solitary, but forming all together a thyrse. (raceme, *Lin.*) Corolla of a bright red colour, darker on the outside; within paler, and variegated with white spots and purple streaks. When the stem pushes up, the root-leaves wither away; and the stem itself, though rigid, soon perishes after flowering^b.

According to Linneus, who had it from Ellis, it is of a doubtful genus. He first ranged it with the *Polemoniums*, though he allowed the appearance to be different. The stem is suffruticose and straight; the plant is not milky; the calyx is one-leaved, with a short tube, and awl-shaped teeth longer than the tube. Stamens inserted into the middle of the tube of the corolla without valves^c.

Native of Carolina, two hundred and fifty miles above Charles Town, in low sandy places, where it was found by Catesby flowering in June. He sent the seeds to Dr. James Sherard, and it was cultivated in the Eltham garden before 1732. It flowered there in October, but the plant perished^d.

3. Leaves petioled. Leaflets seven, lanceolate, quite entire, acuminate, sessile, almost equal. Peduncles axillary: flowers very abundant. Capsules oblong, three-cornered, acuminate, smooth^e. Native of South America.

4. Stem slender, trailing. Leaflets seven, oblong, broad at the end, and blunt. Outside of the corolla light green, inside purple; border six-cleft, with the verges bent back. On many of the Bahama islands, on rocks^f. Found there by Mr. Catesby.

5. Stem herbaceous, twining, quadrangular, smooth, flexuose. Leaves petioled, pentangular, smooth on both sides. Peduncles very long, axillary, upright, round, two-parted-bifid, on one-flowered pedicels. Flowers long, scarlet, larger than those of the first sort. Calyx five-cleft, with lanceolate segments. Tube of the corolla narrower at the base, long, columnar, curved a little and shining: border plaited, blunt; base nectareous. Stamens longer than the corolla: anthers whitish. Germ superior: stigma marked with four lines. Capsule four-celled, four-seeded. Seeds solitary, roundish-angular, wrinkled, black^g.]

It is an annual plant, six or eight feet high. The corolla is not so deep-coloured as that of the first sort; and there is a variety with orange-coloured flowers.

[Browne observes, that it is remarkable for the curved or arched figure of the tube in the corolla.

Native of the West Indies. Cultivated in 1759 by Mr. Miller. It flowers from June to September^h.

6. Stems from a foot to two feet in height, slightly angular, procumbent unless supported, and then climbing. Leaves having little pits on the surface, (whence Linneus's trivial name), on petioles from half an inch to an inch in length; from the axils of these, on short peduncles, spring the flowers, usually solitary, but sometimes two on a peduncle, small, white, with the edges

slightly tinged with purple, and the segments sharp-pointed; the tube is shorter than in *I. Quamoclit*, the stamens stand out less, and are closer together. The seed-vessel ordinarily contains in two cells four seeds, which are convex on one side, and flat on the other; it is slightly hairy towards the top, but all the other parts of the plant are free from hairs. The seed-leaves are two-lobed, and resemble the seed of the *Acer* or *Maple* in formⁱ.

Linneus says that it bears a great resemblance to *I. coccinea*, but that the peduncles are one-flowered, or at most two-flowered; the tube of the corolla thicker, and the corolla itself of a different colour^k.

It is an annual plant, and a native of Virginia and Carolina, whence the seeds were sent to the Eltham garden^l, and there it was cultivated before 1732: but we had it sooner than this, according to Parkinson's *Theatre of Plants*, published in 1640. It flowers here in July^m.]

7. This resembles *I. coccinea*, but the leaves have no angles, and the flowers are of a rose-colour. [Native of America. Cultivated by Mr. Miller in 1759.

8. Root tuberous. Stems several, shrubby, twining, woody at bottom, and the thickness of the human thumb. Leaves smooth, on long petioles the size of a man's hand. Peduncles many-flowered, axillary. Flowers yellow, (bright yellow, *Miller*. sulphur-coloured, *Linn.* purple, *Lour.*) handsome, two inches in diameter, smelling sweet. Capsule membranaceous, shining, subpellucid, square with blunted angles, large, two-celled; in each cell two black, villose seeds, among the largest of the genus.

This plant is wonderfully beautiful when in flower, and the very fragrant odour of the flowers gives it an additional valueⁿ. It is much used in the West Indies for arbours, for which it is very fit, on account of the multitude of its branches and ever-green leaves, which the sun cannot penetrate. It spreads to such an extent, that it may be carried over an arbour of three hundred feet in length, from one root^o. Every part of the plant is purgative, and abounds with milk; probably *Scammony* might be made from the milky juice of the root^p. *Loureiro* affirms that the tubers are eatable, like *Batatas*, (*Convolvulus*) which they resemble very much in taste, size and shape.

Native of the West Indies, where, however, *Jacquin* informs us that he found it wild only in St. Domingo, on the higher mountains near Cape François. *Browne* thinks that it was introduced into Jamaica from the Continent. It is called in that island *Seven-year Vine* or *Spanish Arbour-Vine*. If *I. tuberosa* of *Loureiro* be the same with this, which seems doubtful, from his account of the colour of the flower and quality of the root^q; it is found also in *Cochinchina*, but originally from *Siam*.]

9. This has a smooth twining stalk, which rises four or five feet high. Leaves sessile, five-lobed. The flowers come out from the side of the stalk upon short peduncles, which sustain two or three purple flowers. Seeds brown. Native of the West Indies. [Cultivated by Mr. Miller in 1759.

10. This is an annual plant, growing to a very great length, covering sometimes many trees, or the banks of rivers for many paces, having a round and reddish stalk, armed with blunt, herbaceous, short variously shaped prickles, winding itself about any thing it comes near, or creeping along the surface of the ground. At unequal distances come out on petioles six inches long, smooth petioled leaves, four inches long, and as broad from ear to ear at the base, there being a sinus or hollow from the ears to the point. The flowers are axillary, many, on peduncles an inch long; the tube of the corolla is seldom less than from three to four inches in length; the border is white, five inches in diameter, a little sinuated, and has five green streaks on the outside^r.

Browne observes that the leaves of this plant, and indeed of all the species both of *Convolvulus* and

^b Dillenius.
^c Plumier.

^d Linn. syst.
^e Catesby.
^f Hort. kew.

^g Dill. elth.
^h Swartz.

ⁱ Dillen. elth.

^k Linn. spec.

^l Dillen.

^m Hort. kew.

ⁿ Jacquin.

^o Jacq. Browne, Long, 804.

^p Long.

^q See Sloane, 1. 152.

^r Sloane.

Ipomoea, are very variable, being sometimes in the form of a heart, and sometimes lobed, or panduriform: sometimes also the stem only is prickly, sometimes both stem and petioles.

Gärtner describes the fruit not as a capsule, but as a juiceless berry, globular, one-celled, rufescent or black, smooth: rind leathery, when ripe separating from the pulp, within covered by a very fine white membrane, and marked with six longitudinal streaks: pulp fungose, snowy-white, thin, perforated by filiform nutritious vessels, so closely adhering to the seeds, that it may be separated along with them into four parts. Receptacle none, except the conical rising at the bottom of the berry, to which the seeds and nutritive vessels of the pulp are fixed. Seeds four, ovate, on one side convex with a groove, on the other angular, perforated near the base with a large umbilical aperture; they are smooth, and of a pale testaceous colour.

He refers the other species of *Ipomoea* (except his *zeylanica*) to the genus *Convolvulus*, because they have a genuine capsule, separable into valves.

Native of the West Indies. Introduced in 1773, by John, Earl of Bute. It flowers here in July and August¹.

11. Corolla thicker than in the rest. Under the five-parted perianth there is another smaller orbicular perianth, which is quite entire. Native of the East Indies².

12. The round green sarments or stalks of this plant mount about any tree, shrub or hedge, to a great height, (ten or twelve feet, *Miller*.) cloathing them green, with their many branches and leaves; these are two inches and a half long, and two inches broad at the round base from one ear to the other, smooth, yellowish green, on petioles an inch and quarter in length. Flowers pale purple, (blue, with their brims not angular, but entire, *Miller*.) very large, bell-shaped. Capsule brown, having above five valves, four round protuberances, and in each of them a large triangular smooth solid whitish brown seed³. These divisions of the capsule are probably not natural, but the effect of luxuriance. Native of the West Indies. Cultivated by Mr. Miller in 1759.

13. Stem seeming to be decumbent, flexuose, half a foot high, branched at the base, having hairs scattered over it, few in number below, but more abundant above. Leaves petioled, an inch long, bluntish, with a short dagger point, veined, with a few hairs on the veins underneath, when more advanced smoother. Lower petioles twice as long as the leaves, and smooth; the upper ones hairy. Peduncles from all the axils from top to bottom, angular, thickening upwards, one-flowered; having a few short linear bractes at the base. Leaflets of the calyx ovate, acute, when young covered with long hairs, but when farther advanced smoother and ciliate. Capsule the size of a pea, and smooth. Seeds tomentose, and somewhat silky⁴.

14. Stem shrubby, in open places almost upright, and supporting itself to the height of a man, but in woods climbing twenty feet high; the whole plant, except the seeds, very smooth. Bark ash-coloured. The younger green branches are adorned with leaves, which are roundish-cordate, acuminate or blunt, with a small point, quite entire, veined, alternate, sometimes eight inches in length and breadth, on petioles three inches long. Peduncles subracemed and terminating. Flowers elegant, but void of smell, three inches in diameter, flesh-coloured, opening in succession. Capsules brown and shining, containing blackish seeds wrapped up in abundance of brown-ash-coloured wool.

This plant having many things in common with *Convolvulus*, might not unaptly be referred to that genus; but in truth there are no constant limits between them.

Found by Jacquin every where about Carthagena in America, in sandy coppices near the coast; flowering in February and March. It grew from seed to a considerable height in the stove of the Imperial garden at Vienna, but perished without bearing seed.

¹ Hort. kew.

² Linn. spec.

³ Sloane.

⁴ Vahl.

15. The plant is very smooth all over, and perhaps annual. Stems round, twining. Leaves bluntly acuminate, with a small point, green above, but glaucous with violet-coloured veins on the back, petioled. Common peduncles solitary, axillary, thick, almost the length of the leaves: partial commonly trichotomous: proper frequently falling along with the flowers; which are elegant, very shining, scarlet, inodorous, numerous, two inches in diameter, but the segments being plaited on the sides appear at first sight much narrower and lanceolate. Native of Martinico, in coppices on the hills near the town of St. François; flowering in December and January¹.

16. The whole plant is very smooth, with round twining stems climbing up shrubs to the height of ten feet. Leaves extremely blunt, with a stipular point, varying much in size, and on short petioles. Racemes axillary, very loose, slender and longer than the leaves, spreading out stiffly. Flowers purple, inodorous, very numerous. Capsules brown, inclosing smooth black seeds. Native of woods in Martinico, especially on the borders of the salt marshes; flowering from November to January².

17. Leaves cordate-hastate, with two ears on each side, on a plant that did not flower. Flowers yellow, according to Burmann³. Native of Java.

18. This plant is wholly smooth. Stem twining, angular, with decurrent lines. Leaves petioled, an inch and half long and more, five-nerved; lobes attenuated, blunt, mucronate; the middle one lanceolate-oblong; the side ones lanceolate, divaricate, broader on the outer side, produced at the base into an angle, which is commonly sublobed. Peduncles longer than the leaf, pedicels lateral, two or three-flowered. Calyx smooth; leaflets oblong, acuminate, with an awn the length of the leaflet. Corolla of the same size and form with *I. coccinea*. Observed in the island of Santa Cruz by West⁴.

19. Root perennial. The whole plant is somewhat glaucous and smooth. It grows half a yard and upwards in height, with a slender twining stem. The first leaves are oblong-cordate and scarcely angular, like those of the smaller field *Convolvulus*, next they become more angular, and finally larger, more concave, and still more angular, sagittate and even hastate, sometimes cut off in a straight line, or truncate at the base, but generally irregular at least on one side; resembling those of the great wild *Convolvulus* or Bindweed. Peduncles axillary, solitary, slender, from an inch and half to two inches in length, (on older plants shorter) usually two-flowered, but sometimes one-flowered only. Flowers small, flesh-coloured or very pale purple, of the figure and size of Venus's Looking-glass (*Convolvulus Speculum*); with a short tube concealed within the calyx, and short spreading segments: they do not expand here till about noon; but appear the greatest part of the summer. Capsules three-celled or four-celled, with one seed in each cell. Native of Mexico⁵. Cultivated in the Eltham garden about 1732; but since lost to the European stoves.

20. Root annual. Stem twining, angular, ten or twelve feet high. [Leaves three-lobed, or rather deeply trifid; the segments quite entire, smooth, and almost equal; the middle one ovate, the side ones femicordate. Corollas cylindric, violet-coloured. Stigmas two, globular. Capsules hairy⁶.

It is allied to *Convolvulus edulis*; but that has the first leaves undivided, the next trifid, then quinquifid, and sometimes even septemfid or seven-cleft, but with the side-lobes very small. It varies with one, two and three flowers on a peduncle; with violet, red and white corollas, and with black and white tubers to the root⁷.

Native of the West Indies and Japan; where it flowers from August to October. Here it flowers in June and July. Cultivated by Mr. Miller in 1759⁸.

21. Stem twining, smooth, triangular with decurrent lines, even. Leaves an inch and half in length, smooth,

¹ Jacquin.

² Ibid.

³ Linn. mant.

⁴ Vahl.

⁵ Dillenias.

⁶ Linn. spec. and Thunb.

⁷ Thunberg.

⁸ Hort. kew.

paler beneath: lobes lanceolate, blunt, mucronate; the side ones shorter, the outmost gibbous at the base on the outside, the two middle ones narrower. Petioles filiform, longer than the leaf. Peduncles three times as thick as the petiole, longer than the leaf, triangular: pedicels in threes or sixes, angular, mucronate, one-flowered, jointed at the base. Calycine leaflets ovate, mucronate, the length of the capsule. Corolla small.—It is allied to *I. triloba*, but seems to differ in having a smooth even stem, whereas in that it is hirsute and rugged; five-lobed leaves, and peduncles commonly six-flowered^z.

According to Sloane, it has a small stringy root, a round purple stalk, two feet high, purplish green leaves, divided almost to the petiole, and somewhat like those of the Papaw; the flowers are purple.

Native of Jamaica and Santa Cruz.

22. The corolla in this is four times as long as in *I. triloba*, and the peduncles bear many flowers in racemes^h.

It is an annual plant, a native of South America, and was introduced here in 1773, by Joseph Nicholas de Jacquin, M.D.ⁱ

23. This rises with a twining hairy stalk four or five feet high. Leaves palmate, five-lobed, sessile. Flowers axillary, on short peduncles, two or three together, purple. Capsules round, three-celled, with one brown seed in each cell.

[Stem annual, simple, slender. Leaves cordate, three-lobed, somewhat sharp, hairy, on long petioles. Flowers axillary, blue, on one-flowered, heaped peduncles, not properly aggregate. Tube of the corolla long, thickish, border five-cleft. Capsule three-celled^k.

Native of Ceylon and CochinChina. Cultivated by Mr. Miller in 1759.

24. Flowers closely heaped together in heads, and surrounded with many hairy leaves. Capsules depressed, rounded-four-cornered, two-celled, containing two seeds in each cell: but the principal distinction consists in the leafy heads and aggregate flowers. Calyxes divided to the bottom into five narrow hairy segments, and on the peduncles one or two oblong narrow hairy leaves, so that the whole head has a hirsute appearance; but the leaflets are larger towards the outside of the head, till they become at length like the leaves on the stem, only smaller. Flowers very small, short, divided into five roundish segments, commonly plaited and converging, and seldom expanding till about noon, when the sun shines hot: they are of a blue colour, but soon wither and become brown or black. Capsules membranaceous, depressed, roundish four-cornered, two-celled, with two seeds in each; these are small, with a smooth even surface, swelling on the back, but the two other sides flat. The membranous partition of the capsule not being fastened to the sides, but loose in the middle, strictly speaking the capsule is rather one-celled than two-celled. The stems are long and thick, and yield a milky juice on being cut or broken. It is an annual plant, flowering in summer, (July) and is a native of the farther Carolina^l.

It was cultivated in 1732, by James Sherard, M.D.^m

25. Flowers as in the preceding species, small and converging, but white; and besides these, others larger and more bell-shaped, the latter from bell-shaped end in a funnel-shaped form, are divided at the edge into five bifid segments, and are whitish, or of a very pale purple colour. Calyx divided to the base into five broadish hairy segments, and each calyx having a small leaf, the heads of flowers are leafy; these leaflets are narrower within, wider without, and are larger than in the preceding species. Five or seven flowers come out alternately in each head. The heads are very hairy at the base, and so are the stems, and the leaves on both sides, but the hairs on the edges of these are less conspicuous. Capsules as in the preceding, with the same number of seeds, which are villose, mouse-coloured, bluntly three-sided, rounded on the back, angular on the sidesⁿ.

Native of the East Indies. Cultivated in 1732, by James Sherard, M.D. It flowers in August^o.

These two species with aggregate flowers, differing so much from the others, are placed in a distinct genus by Dillenius, under the name of *Volubilis*.

Some of the species of *Ipomoea* indeed differ more from others than they do from some species of *Convolvulus*, from which genus this can scarcely be separated; that, however, is too unwieldy already to admit of unnecessary enlargement, and the *Ipomoeas* are, to a botanical eye, sufficiently distinct in their habit to be kept together, and separate from *Convolvulus*.

26. Native of the Cape of Good Hope.

27. The fruit of this is properly a Berry, globular, fleshy, mucronate at top, either quite round or obscurely four-cornered, pale green, smooth: rind of a moderate thickness, fleshy, easily separable from the pulp, which is spongy, four-celled, or by abortion two-celled; the cells clothed with their proper membrane, but not cohering with the seeds. These are solitary, in the two-celled berries two, plano-convex; in the four-celled four, convex on one side, angular on the other, cinereous brown: outer covering leathery, thick, smooth. It differs from the other *Ipomoeas*, except n. 10. in the structure of the pericarp, above described, and also in the circumstance given in the specific difference.

Native of Ceylon, where it is named *Kiritiella*^p.]

PROPAGATION AND CULTURE.

1. This is a tender plant, and will not thrive in the open air in England; it is propagated by seeds, which should be sown on a hot-bed in the spring; and as the plants will soon appear, they should be each transplanted into a small pot filled with light earth, before they twine about each other, for then it will be difficult to disengage them without breaking their tops. When they are potted, they should be plunged into a new hot-bed, and sticks placed down by each plant for their stalks to twine about; after they have taken new root, they should have a good share of air in warm weather to prevent their drawing up weak; and when they are advanced too high to remain under the frame, they should be removed into the tan-bed in the stove, where they should have support, for their branches will extend to a considerable height. They will begin to flower in June, and there will be a succession of flowers till the end of September, and the seeds will ripen well in this situation every autumn.

5, 7. If the seeds of these sorts are sown on a hot-bed in the spring, and when the plants come up, if they are gradually hardened, and afterward transplanted into a warm border, in favourable seasons they will flower and produce good seeds; but most people raise the plants on a very gentle hot-bed, and transplant them afterwards into another; by which method they are brought forward, and will perfect their seeds earlier.

8. This is a perennial plant, but too tender to thrive in the open air in England; the seeds of this must be sown upon a hot-bed in the spring, and when the plants come up, they must be transplanted into separate pots, and plunged into a fresh hot-bed; but as they will soon grow too tall to stand under a frame, they should be removed into the bark-stove, where they must be supported, otherwise they will twine about all the neighbouring plants. As these plants extend their shoots to a very great length, they require a tall stove, where they may have room to grow, without which they will never produce any flowers. I have had these plants several years, but have only seen one flower produced from them; for they grow so very large before they begin to have flowers, as that few of the stoves in England have height enough for their growth.

9, 20, 23. These are also tender, so the plants must be raised on a hot-bed in the spring, and afterwards planted in separate pots, plunging them into another hot-bed; where they may remain till they reach the glasses, when they should be removed into a glass case where they may have room, and be screened from the cold, but should have a large share of free air admitted

^z Vahl. ^h Linn. spec. ⁱ Hort. kew. ^k Loureiro.
^l Dillenius. ^m Hort. kew. ⁿ Dillenius.

^o Hort. kew.

^p Gartner.

to them in warm weather; with this treatment the plants will flower and produce ripe seeds.

IPOMŒA. See *Convolvulus*.

IRA CEU BALARI. See *Cyperus*.

IREFINE. (From *Eigos*, *Wooll*. *Eigeioww* is an olive-branch with wooll wrapped round it, which the Greeks hung up before their houses to avert famine.)

Brown. jam. 358. Lin. gen. n. 1113. Reich. 1217. Schreb. 1519. Juss. 88.

Class. 22. 5. Dioecia Pentandria.

Nat. order of *Holoraceæ*.—*Amaranthi*, Juss.

GENERIC CHARACTER.

* Male.

CAL. Perianth two-leaved, very small, acute, glossy.

COR. Petals five, sessile, lanceolate, erect.

Nettary of five scales, the stamens being interposed.

STAM. Filaments five, upright. Anthers roundish.

* Female.

CAL. as in male.

COR. as in male.

PIST. Germ ovate. Style none. Stigmas two, roundish.

PER. Capsule oblong-ovate.

SEEDS some, downy.

ESSENTIAL CHARACTER.

Cal. two-leaved. Cor. five-petalled.

MALE. Nett. seven.

FEM. Stigmas two, sessile. Caps. with tomentose seeds.

SPECIES.

I. Irefine Celofia.

Lin. syst. 885.

I. celosioides. *Lin. spec. 1456. Reich. 4. 249. Brown. jam. 358. Sloan. jam. 1. 142. t. 90. Pluk. phyt. t. 261. f. 1. (Amaranthus).*

Celofia fol. lanceolato-ovatis, panicula diffusa filiformi.

Gron. virg. 144. 35.

DESCRIPTION, &c.

Perennial. Stems weak, requiring support, rising ten or twelve feet high, (Sloane and Browne say two or three) having large knots at each joint, with oval-lanceolate (or oval, entire,) smooth leaves. Stems very diffused, branching out on every side. Flowers terminating, in slender loose panicles, covered with a silky down, and of a pale yellow colour; these appear in July and August, and in warm seasons the seeds will ripen in autumn.

[According to Sloane, the stems are cornered, yellowish green, hollow, smooth, needing support, but not twining, as big as a goose quill, having few joints, and at them leaves, which are opposite, an inch and half long, and half as broad near the round base, ending in a point, and of a yellowish green colour.

Browne describes it with male and female flowers separate. Swartz on the contrary never found it but with hermaphrodite flowers. He thinks it very nearly allied to Celofia, if not a species of that genus. He thus describes it.—Root annual. Stem upright, from a foot to a fathom in height, divided at top, round, striated, smooth, loose, jointed at the insertion of the branches, joints swelling: branches opposite, spreading a little. Leaves opposite, petioled, lanceolate or ovate-lanceolate, acuminate, smooth. Panicles terminating, branched; branches diffused, alternate, spreading: flowers in a sort of spike, on short peduncles, small, ovate, whitish; at the base of the flowers are extremely minute, shining, yellowish, imbricate scalelets. Calyx or corolla five-cleft, with acute upright segments. Filaments shorter than the corolla. Germ roundish. Style very short, trifid. Stigmas reflex. The calyx instead of a capsule incloses a black shining seed. A white wooll bursts out from among the scales after the flowering is past.] Native of Jamaica, and most of the other islands in the West Indies, [among shrubs, chiefly in a cretaceous soil. It was cultivated by Mr. Miller before 1768.

IREFINE. See *Celofia* & *Illecebrum*.

IRIA. See *Cyperus*.

IRIO. See *Erysimum*.

IRION. See *Roridula*.

IRIPA. See *Cynometra*.

IRIS. (Iris of *Theophrastus* and *Dioscorides*, *Iris* of *Pliny*; so named from the variety of colours in the flowers.)

Lin. gen. n. 59. Reich. 69. Schreb. 79. Tournef. 186, 187, 188. Juss. 57. Thunb. diff. 2. Gärtn. t. 13.

Xiphion. *Tournef. 198. Mill. dict. Sifyrinchium & Hermodactylus. Tournef.*

Class. 3. 1. Triandria Monogynia.

Nat. order of *Ensatæ*.—*Irides*, Juss.

Hexapetale Tricapsulares. *Moris. Raii, &c. Li- liaceæ, Tournef.*

GENERIC CHARACTER.

CAL. Spathes bivalve, separating the flowers, permanent.

COR. six-parted. Petals oblong, obtuse: the three exterior ones reflex; the three interior upright and sharper: all connected at the claws into a tube of different lengths in the different species.

STAM. Filaments three, awl-shaped, incumbent on the reflex petals. Anthers oblong, straight, depressed.

PIST. Germ inferior, oblong. Style simple, very short. Stigmas three, petal-form, oblong, carinated within, furrowed without, incumbent on the stamens, two-lipped. Outer lip smaller, emarginate; inner larger, bifid, subinflected.

PER. Capsule oblong, cornered, three-celled, three-valved.

SEEDS several, large.

OBS. The Nettary in some (1—9) is a longitudinal villose line, engraven on the base of the reflex petals; but in others it consists of three melliferous pores at the base of the flower. The capsule in some is trigonal, in others hexagonal.

Xiphium T. has a bulbous root and awl-shaped leaves.

Sifyrinchium T. has a double bulbous root, one placed on the other.

Hermodactylus T. has a tuberos root, and tetragonal leaves.

Iris T. has a fleshy oblong creeping root, and sword-shaped leaves.

ESSENTIAL CHARACTER.

Cor. six-petalled, unequal, petals alternate, jointed and spreading. Stigmas petal-form, cowed-two-lipped.

SPECIES.

* Bearded (having the spreading petals furnished with hairs.)

Leaves ensiform.

[1. Iris ciliata. Ciliate-leaved Iris.

Lin. syst. 88. suppl. 93. Thunb. diff. 4. prodr. cap.

II.

Bearded, leaves ensiform, ciliate.

2. Iris minuta. Minute Iris.

Lin. syst. 88. suppl. 98. Thunb. diff. 4. prodr. cap.

II.

Bearded, leaves ensiform, smooth, scape one-flowered, petals oblong, acute.]

3. Iris pumila. Dwarf Iris.

Lin. syst. 88. spec. 56. Reich. 1. 106. hort. cliff.

19. n. 5. *Thunb. diff. 4. Jacqu. austr. 1. 5.*

t. 1. *Gmel. sib. 1. 32. n. 32. Pallas. it. 1. 148.*

Curt. magaz. t. 9. Villars dauph. 2. 224. Best.

eyst. vern. 8. t. 1, 2.

Chamæiris minor flore purpureo. *Baub. pin. 33.*

Mor. hist. 2. 355. f. 4. t. 6. f. 15.

C. latifolia minor 1, 2. *Clus. hist. 1. 225. Raii hist.*

1187.—flore rubello. *Ger. emac. 57. f. 9.—latif.*

min. purpurea. *Park. parad. 186.*

β. C. minor, flore purpureo-cæruleo. *Baub. pin. 33.*

γ. C. min. flore rubello. *Baub. pin. 33.*

δ. C. flore pallido & albo. *Baub. pin. 33.*

C. saxatilis gallica. *Baub. pin. 34. Raii hist. 1187.*

ε. C. min. flore variegato. *Baub. pin. 34.*

Iris angustifolia maritima minor. *Baub. pin. 33.*

ζ. C. flore luteo & pallide luteo. *Baub. pin. 34.*

Bearded, leaves ensiform, smooth, scape one-flowered,

petals oblong, blunt.

4. Iris fusiana. Chalcedonian Iris.

Lin. spec. 55. syst. 88. Reich. 1. 104. hort. cliff.

18. 1. *Curt. magaz. t. 91. Thunb. diff. 4.*

I. fusiana, flore maximo ex albo nigricante. *Baub.*

pin. 31. theat. 579. Mær. hist. 2. 351. f. 4. t. 6.

f. 6.

- I. latifolia major. *Clus. hist.* 1. 217.—fus. vel calcedonica, flore majore variegato. *Baub. hist.* 2. 721.
 I. calced. latif. *Best. eyf. vern.* 8. 4. f. 1.
 I. calced. *Ger.* 51. f. 2. *emac.* 55. f. 2.—f. Sufiana major. *Park. parad.* 179. t. 183. f. 1.
Bearded, leaves ensiform, smooth, scape one-flowered, petals rounded.
 5. Iris florentina. *Florentine Iris.*
Lin. spec. 55. *syf.* 88. *Reich.* 1. 105. *mat. med.* 44. *Woodv. med. bot.* 112. t. 39. *Plenck. ic.* 35. *Zorn. ic.* 186. *Blackw. t.* 414. *Best. eyf. vern.* 8. 4. f. 2. *Thunb. diff.* 4.
 I. alba florentina. *Baub. pin.* 31. *Ger.* 47. f. 1, 2. *emac.* 52. f. 1, 2. *Park. parad.* 180. t. 183. f. 2.
 β. I. alba germanica. *Baub. pin.* 31.
 I. flore albo. *Baub. hist.* 2. 719. *Raii hist.* 1180.
Bearded, leaves ensiform, smooth, shorter than the subbiflorous scape.
 6. Iris biflora. *Twice-flowering Iris.*
Lin. spec. 56. *syf.* 88. *Reich.* 1. 106. *hort. ups.* 17. *cliff.* 19. 4. *Pallas it.* 1. 171. *Thunb. diff.* 4.
Ger. 49. f. 5. *emac.* 53. f. 5.
Chamæiris latifolia biflora. Best. eyf. vern. 8. t. 1. f. 4.
 C. major saturate purpurea biflora. *Baub. pin.* 33.
 I. biflora lusitana flore violaceo. *Clus.* 22. *Baub. hist.* 2. 722. *Raii hist.* 1185.
Bearded, leaves ensiform, smooth, shorter than the subtriflorous scape.
 7. Iris aphylla. *Leafless Iris.*
Lin. spec. 56. *syf.* 89. *Reich.* 1. 105. *Thunb. diff.* 4.
 I. latifolia caule aphylo. *Baub. pin.* 32. *Raii hist.* 1185.
Bearded, leaves ensiform, smooth, equalling the many-flowered almost naked scape.
 8. Iris variegata. *Variegated Iris.*
Lin. spec. 56. *syf.* 89. *Reich.* 1. 106. *hort. ups.* 16. *cliff.* 19. 3. *Jacqu. austr.* 1. 7. t. 5? *Curt. magaz. t.* 16. *Thunb. diff.* 4.
 I. latifolia pannonica, colore multiplici. *Baub. pin.* 31. *Raii hist.* 1184.
 I. lutea variegata. *Lob. hist.* 34. *Ehret. pict. t.* 10. f. 3. *Ger.* 51. 1. *emac.* 55. 1. *Camer. hort.* 80. *Park. parad.* 182. t. 183. f. 3.
 I. lutea, foliis florum repandis variegatis. *Baub. hist.* 2. 271.
Bearded, leaves ensiform, smooth, equalling the many-flowered scape.
 9. Iris germanica. *German Iris.*
Lin. spec. 55. *syf.* 89. *Reich.* 1. 105. *hort. cliff.* 18. 2. *ups.* 16. *mat. med.* 4. *Thunb. diff.* 4. *Hall. belv. n.* 1258. *Scop. carn. n.* 51. *Pollich. pal. n.* 34. *Jacqu. vind.* 18. *Villars dauph.* 2. 224. *Krock. files. n.* 56. *Fuchs.* 317. *Blackw. t.* 69. *Plenck. ic.* 34.
 I. vulgaris germ. f. fylvestris. *Baub. pin.* 30.
 I. vulg. *Ger.* 46. f. 1. *emac.* 50. f. 1. *Raii hist.* 1180.
 I. latifolia vulg. cærulea. *Best. eyf. vern.* 8. 5. f. 2.
 I. purpurea f. vulg. *Park. parad.* 181.
 I. fylvestris. *Matth.* 1611.—major. *Camer. epit.* 2.
Bearded, leaves ensiform, smooth, sickle-shaped, shorter than the many-flowered scape.
 [10. Iris lurida. *Dingy Iris.*
Ait. hort. kew. 1. 68.
Bearded, stem higher than the leaves and many-flowered, outer petals revolute, inner from erect bent in, somewhat waved, and slightly emarginate.]
 11. Iris sambucina. *Elder-scented Iris.*
Lin. spec. 55. *syf.* 89. *Reich.* 1. 105. *Thunb. diff.* 5. *Jacqu. hort.* 1. 1. t. 2. *Curt. magaz.* 187. *Krock. files. n.* 57.
 I. latifolia germanica sambuci odore. *Baub. pin.* 31. *Raii hist.* 1183.
 I. major. latif. 8. *Clus. hist.* 1. 219.
Bearded, leaves ensiform, smooth, erect, shorter than the many-flowered scape, petals bent down, flat.
 12. Iris squalens. *Brown-flowered Iris.*
Lin. spec. 56. *syf.* 89. *Reich.* 1. 106. *Krock. files. n.* 58. *Thunb. diff.* 5.

- I. variegata. *Jacqu. austr.* 1. 7. t. 5.
Bearded, leaves ensiform, smooth, erect, shorter than the many-flowered scape, petals bent down and folded back.
 [13. Iris compressa. *Flat-stalked Iris.*
Lin. syf. 89. *suppl.* 98. *Thunb. diff.* 5. *prodr. cap.* 11.
Bearded, leaves-ensiform, smooth, scape panicled, compressed.
 14. Iris cristata. *Crested Iris.*
Smith. spicil. t. 13. *Ait. hort. kew.* 1. 70.
Bearded, beard crested, stem mostly one-flowered, the length of the leaves, germs three-cornered, petals almost equal.
 15. Iris dichotoma. *Forked Iris.*
Lin. syf. 89. *suppl.* 97. *Thunb. diff.* 5. *Pallas it.* 3. 714. t. A. f. 2.
Bearded, leaves ensiform, smooth, stem panicled, round. Leaves linear.
 16. Iris tripetala. *Three-petalled Iris.*
Lin. syf. 89. *suppl.* 97. *Thunb. diff.* 5. *prodr. cap.* 11.
Bearded, leaf linear, longer than the one-flowered scape, petals alternate, awl-shaped.
 17. Iris tricuspid. *Trifid-petalled Iris.*
Lin. syf. 89. *suppl.* 98. *Thunb. diff.* 5. *prodr. cap.* 11.
Bearded, leaf linear, longer than the subbiflorous scape, alternate petals trifid.
 18. Iris plumaria. *Feathered Iris.*
Lin. syf. 89. *Thunb. diff.* 5. *prodr. cap.* 11.
Moræa juncea. Lin. spec. 59. *Reich.* 1. 111. *Gertn. fruct.* 39. t. 13.
M. iriopetala. Linn. suppl. 100.
Bearded, leaves linear, scape many-flowered, stigmas setaceous-multifid.
 * Beardless.
 Leaves ensiform.
 19. Iris Xiphium. *Bulbose-rooted Iris.*
Lin. spec. 58. *syf.* 90. *Reich.* 1. 110. *hort. ups.* 17. *cliff.* 20. 12. *Thunb. diff.* 5. *Wither. arr. ed.* 3. 69.]
 α. Xiphium latifolium. *Mill. dict. n.* 3. *Tourn. inst.* 363.
 I. bulbosa latifolia, caule donata. *Baub. pin.* 38.
Great Bulbose-rooted Iris.
 β. Xiphium vulgare. *Mill. dict. n.* 2.
 X. angustifolium. *Tournef. inst.* 364. *Boerb. lugdb.* 2. 126. 2—11.
 Iris bulbosa cæruleo-violacea. *Baub. pin.* 40.—fl. luteo. *Ger.* 93. 3, 4. *emac.* 101. 5.
Small bulbose-rooted Iris.
Beardless, leaves ensiform, channelled, awl-shaped, shorter than the two-flowered scape.
 20. Iris Pseudacorus. *Common yellow or water Iris.*
Lin. spec. 56. *syf.* 90. *Reich.* 1. 107. *Fl. lapp. n.* 16. *succ. n.* 37. *hort. cliff.* 19. 6. *mat. med.* 44. *Woodv. med. bot.* 114. t. 40. *Thunb. diff.* 5. *Huds. angl.* 14. *Wither. arr.* 39. *ed.* 3. 69. *Curt. lond.* 3. 4. 197. *Relh. cant. n.* 28. *Hall. belv. n.* 1260. *Scop. carn. n.* 49. *Pollich. pal. n.* 35. *Gmel. fib.* 1. 31. *Neck. gallob.* 20. *Villars dauph.* 2. 224. *Krock. files. n.* 29. *Fl. dan. t.* 494. *Zorn. ic.* 187. *Plenck, ic. t.* 36.
 I. palustris lutea. *Ger.* 46. 2. *emac.* 50. 2. *Raii hist.* 1186. *syn.* 374.—f. *Acorus adulterinus. Baub. hist.* 2. 732. 1. *Mor. hist. f.* 4. t. 6. f. 11.
Acorus adulterinus. Baub. pin. 34. *theat.* 633. *Blackw. t.* 261.—palustris, f. *Pseudo-iris & I. lut. pal. Park. theat.* 1219.
Acorum falsum. Camer. epit. 6.
Pseudo-iris. Dod. pempt. 248. 1. *Lob. obs.* 31. 1.—palustris. *Best. eyf. vern.* 8. 7. f. 3.
Beardless, leaves ensiform, alternate petals smaller than the stigma.
 21. Iris foetidissima. *Stinking Iris.*
Lin. spec. 57. *Reich.* 1. 107. *hort. cliff.* 19. 7. *Murr. prodr.* 137. *Huds. angl.* 14. *Wither. arr.* 40. *Relh. cant. n.* 29. *Sauv. monsp.* 41. *Villars dauph.* 2. 225. *Berg. phyt.* 2. 185. *Plenck, ic.* 37.
 I. foetida. *Lin. syf.* 90. *Thunb. diff.* 5. *Wither. arr. ed.* 3. 70.
 Xyris. *Camer. epit.* 733. *Lob. obs.* 37. 1. *Ger.* 53. 1. *emac.* 60. *Raii hist.* 1190.
 X. vel

- X. vel *Iris maxima foetida*. *Mor. hist. f. 4. t. 5. f. 2.*
X. f. *Spatula foetida*. *Park. theat. 256. 5.*
Spatula foetida, *Xyris*. *Baub. hist. 2. 731. 2. Fuchsf. hist. 794. Dod. pempt. 247. 2. Blackw. t. 158. Best. cyst. vern. 8. 8. f. 1.*
Gladiolus foetidus. *Baub. pin. 30. theat. 560. Raii syn. 375.*
Beardless, leaves ensiform, scape one-angled.
- [22. *Iris virginica*. *Virginian Iris*.
Lin. spec. 58. syst. 90. Reich. 1. 108. Thunb. diff. 5. Gron. virg. 7. ult. Jacqu. collect. 2. 322.
Beardless, leaves ensiform, scape ancipital.
23. *Iris versicolor*. *Various-coloured Iris*.
Lin. spec. 57. syst. 90. Reich. 1. 108. Curt. magaz. t. 21. Thunb. diff. 5. jap. 34.]
I. picta. *Mill. dict. n. 16.*
[*I. americana versicolor*, stylo crenato & non crenato.
Dill. elth. 187, 188. t. 155. f. 187, 188.
Beardless, leaves ensiform, scape round, flexuose, germs subtrigonal.
24. *Iris ochroleuca*. *Pale-yellow Iris*.
Lin. syst. 90. Reich. 1. 109. mant. 175. Thunb. diff. 6. Trew. Ebret. 56. t. 100. Curt. magaz. 61.]
I. orientalis. *Mill. dict. n. 9. fig. t. 154.*
[*Beardless, leaves ensiform, scape subcylindric, germs hexagonal.*
25. *Iris halophila*. *Long-leaved Iris*.
Ait. hort. kew. 1. 72. Pallas it. 2. 733. vol. 3. p. 713. t. B. f. 2.
Beardless, leaves ensiform, those next the root very long, stem round, germs hexagonal.
26. *Iris spathacea*. *Long-spathed Iris*.
Lin. syst. 90. Thunb. diff. 6.
I. spathulata. *Lin. suppl. 99.*
Beardless, leaves ensiform, rigid, scape round, two-flowered, spathes very long.
27. *Iris ramosa*. *Branching Iris*.
Lin. syst. 90. Thunb. diff. 6. prodr. cap. 12.
I. ramosissima. *Lin. suppl. 99.*
Beardless, leaves ensiform, stem paniced, many-flowered. With linear leaves.
28. *Iris Sisyrinchium*. *Crocus-rooted Iris*.
Lin. spec. 59. syst. 91. Reich. 1. 110. Thunb. diff. 6.
Sisyrinchium.—*Ger. 94. f. 1. Park. parad. 170. t. 169. f. 6.—majus. Baub. pin. 40. Clus. hist. 1. 216. Ger. emac. 103. f. 1. Raii hist. 1166.*
β. *S. medium*. *Baub. pin. 41.*
S. minus. *Clus. hist. 1. 216. Ger. emac. 103. f. 2. Raii hist. 1166.*
Beardless, leaves linear, waved, reflex, scape one-flowered.]
29. *Iris verna*. *Spring Iris*.
Lin. spec. 58. syst. 91. Reich. 1. 109. Thunb. diff. 6. Gron. virg. 10. 7. Pluk. phyt. t. 196. f. 6.
Beardless, leaves linear, flat, scape one-flowered; shorter than the leaves, root fibrose; (alternate petals equalling the others.)
- [30. *Iris persica*. *Persian Iris*.
Lin. spec. 59. syst. 91. Reich. 1. 110. Thunb. diff. 6. Gertn. fruct. 1. 39. Curt. magaz. t. 1.
Iris bulbosa persica. *Park. parad. 172. Raii hist. 1128.—variegata præcox. Ferrar. hesp. Dodart. mem. 83. Rob. ic. 186.*
I. pers. martia. *Rudb. elyf. 2. 10. f. 9.*
I. bulb. præcox minus odora pers. variegata. *Mor. hist. 2. 357. f. 4. t. 7. f. 2.]*
Xiphium persicum. *Mill. dict. n. 1.—præcox flore variegato. Tournef. inst. 363.*
Beardless, leaves linear, flat, scape one-flowered, alternate petals shorter: (inner petals very short and spreading.)
- [31. *Iris angusta*. *Narrow-leaved Iris*.
Lin. syst. 91. Thunb. diff. 6. prodr. cap. 12.
Beardless, leaf filiform-linear, upright, smooth, scape smooth, one or two-flowered, spathes blunt.]
32. *Iris setacea*. *Bristle-leaved Iris*.
Lin. syst. 91. Thunb. diff. 6. prodr. cap. 12.
I. setifolia. *Lin. suppl. 99.*
Beardless, leaf filiform-linear, upright, smooth, scape smooth, one-flowered, spathes acute, membranaceous.
33. *Iris tenuifolia*. *Slender-leaved Iris*.
Lin. syst. 91. suppl. 97. Thunb. diff. 6. Pallas itin. 3. 714. t. C. f. 2.
Beardless, leaves filiform-linear, scape two-flowered.]
34. *Iris graminea*. *Grass-leaved Iris*.
Lin. spec. 58. syst. 91. Reich. 1. 109. hort. cliff. 19. 10. upf. 17. Thunb. diff. 6. Scop. carn. n. 50. Jacqu. austr. 1. 5. t. 2. vind. 8. Baub. hist. 2. 727. Raii hist. 1189. 6. Krock. files. n. 61.
I. angustifolia prunum redolens minor. *Baub. pin. 33.*
I. angust. 3. Clus. hist. 1. 230. (6. Ray & Lin. cliff.)
I. perpusilla sylvestris angust. *Lob. hist. 34.*
I. sylvestris. *Matth. Diosc. 18.*
Chamaeiris. *Dod. pempt. 247.—tenuifolia. Ger. 52. f. 5. emac. 56. f. 6.*
Beardless, leaves linear, scape subbiflorous, ancipital, germs hexagonal.
35. *Iris spuria*. *Spurious Iris*.
Lin. spec. 58. syst. 91. Reich. 1. 108. hort. cliff. 19. 9. upf. 17. Thunb. diff. 6. Jacqu. austr. 1. 6. t. 4. Pallas. it. 2. 456. Fl. dan. t. 734. Curt. magaz. t. 58. Gouan. illustr. 2.
I. pratensis angustifolia folio foetido. *Baub. pin. 32. Raii hist. 1188.*
I. angust. 1. Clus. hist. 1. 228.
I. tenuifolia michelfeldensis spontanea. *Baub. hist. 2. 725.*
Beardless, leaves linear, scape round, subtriflorous, germs three-cornered.
36. *Iris sibirica*. *Siberian Iris*.
Lin. spec. 57. syst. 91. Reich. 1. 108. hort. cliff. 19. 8. upf. 17. Gertn. fruct. 1. 38. Thunb. diff. 6. in Lin. transf. 2. 328. Hall. helv. n. 1259. Gmel. fib. 1. 28. Jacqu. austr. 1. 6. t. 3. Pollich. pal. n. 36. Krock. files. n. 60. Curt. magaz. t. 50.
I. pratensis angustifolia non foetida altior. *Baub. pin. 32. theat. 597. Raii hist. 1189.*
I. angust. 2. Clus. hist. 229.
I. tenuifolia major, flore cæruleo & striato. *Baub. hist. 2. 728.*
I. angust. minor, pannonica f. versicolor. *Park. parad. 184. t. 185. f. 3.*
I. sylvestris byzantina. *Ger. 52. f. 3. emac. 56. f. 4.*
Beardless, leaves linear, scape round, subtriflorous, germs three-cornered.
- [37. *Iris flexuosa*. *Wave-leaved Iris*.
Lin. syst. 92. Murr. in comm. gott. 1776. p. 30. t. 4.
Beardless, leaves linear, flexuose, stem three-flowered, round, thick, germs three-cornered.
38. *Iris martinicensis*. *Martinico Iris*.
Lin. spec. 58. syst. 92. Reich. 1. 108. Thunb. diff. 6. Jacqu. amer. 7. t. 7. pict. 10. t. 10. Plum. spec. 8. ic. 260. t. 261. f. 2.
Beardless, leaves linear, petals with little glandular pits at the base, germs three-cornered.
39. *Iris pavonia*. *Peacock Iris*.
Lin. syst. 92. suppl. 98. Thunb. diff. 7. t. 1. prodr. cap. 12.
Beardless, leaf linear, smooth, scape one or two-flowered.
40. *Iris crispa*. *Curl-leaved Iris*.
Lin. syst. 92. suppl. 98. Thunb. diff. 7. t. 1. prodr. cap. 12.
Beardless, leaves linear, curled.
41. *Iris papilionacea*.
Lin. syst. 92. suppl. 98. Thunb. diff. 7. t. 2. prodr. cap. 12.
Beardless, leaves linear, reflex, rough-haired.
42. *Iris edulis*.
Lin. syst. 92. suppl. 98. Thunb. diff. 7. prodr. cap. 12.
Moræa fugax. *Jacqu.*
Beardless, leaf linear, pendulous, smooth, scape smooth, many-flowered.
43. *Iris tristis*.
Lin. syst. 92. suppl. 97. Thunb. diff. 7. prodr. cap. 12.
Beardless, leaves linear, smooth, scape rough-haired, branched.
44. *Iris*

It resembles *I. germanica* very much, but differs in having the petals white and entire, the edges of the smaller petals reflex at the base, the larger ones more upright, and the lip of the stigma crenated and more upright^a.

Native of the South of Europe. Cultivated in 1596 by Gerarde. It flowers in may and juneⁱ. This is named by our old writers White Flower de-luce, or Flower de-luce of Florence: The preceding is called by them Turkey Flower de-luce from the French *Fleur-de-lys*.

6. Scape simple, striated, longer than the leaves, a span in height, sustaining two or three flowers, sometimes four. Leaves subfalcated, acute, striated, from erect patulous. Petals violet-coloured, entire. Capsule cylindric, with three streaks^k. Native of Portugal and Spain. Cultivated in 1596 by Gerarde. It flowers in april and may^l; and again in autumn, whence it had the name of *biflora*^m, but improperly because it tends to mislead. It should have been *biflorens*, or more classically *bifera*. I have therefore named it *Twice-flowering Iris*.]

7. This has three or four large bright-purple flowers, which stand above each other, and have purplish sheaths; the three bending petals or falls are striped with white from the base to the end of the beard. The capsules are large, blunt and triangular. It flowers at the end of may, and the seeds ripen at the beginning of august. [Its native place of growth is unknown.

8. Scape striated, scarcely longer than the leaves, a foot and more in height. Leaves acute, striated, upright, the lower ones the length of the scape, but the upper ones gradually shorter. Flowers at the top of the scape divided, alternate, coming out successively, handsome, yellow, netted with blackⁿ.] The upper part of the stem is naked, and divides into three branches, each of which has two or three flowers one above another: the three upright petals or standards are yellow, and the bending petals or falls are variegated with purple stripes. It flowers in june, but is rarely succeeded by seeds in England. Native of Hungary. [Cultivated by Gerarde in 1597^o. He calls it Variable Flower de-luce.

9. Scape divided at top, larger than the leaves. Leaves reflex-falcated, nerved, an inch wide. Flowers blue, with the smaller petals quite entire^p.]

This has the largest leaves of any of the species; they are of a grayish colour and spread wide, embracing each other at their base, where they are purplish. The stalks rise near four feet high, and divide into several branches, each supporting three or four flowers, which are covered with a thin sheath; the three bending petals or falls are of a faint purple inclining to blue, with purple veins running lengthwise; the beard is yellow, and the three erect petals or standards are of a bright blue, with some faint purple stripes; the flowers have an agreeable scent.

[Native of Germany, Switzerland and Dauphiné.— Cultivated in 1596 by Gerarde. It flowers in may and june^q.

10. Outer petals bent back, very dark purple, with yellowish stains below the middle; beard yellow. Inner petals obovate-oblong, a little shorter than the outer ones, with a purplish border, and a dirty yellow claw. Stigmas dirty yellow, pale purplish above. It may perhaps be no more than a variety of *I. sambucina*, but it is totally void of smell. Native of the South of Europe. Cultivated by Mr. Miller in 1758. It flowers in april^r.

11. Scape divided at top, longer than the leaves, two (or three) feet high. Leaves inflex-falcated at top, striated, the upper ones gradually shorter. It resembles *I. germanica*, from which, however, it differs in having the larger petals of a deeper violet colour, and subemarginate; the smaller petals emarginate, and of a deeper blue colour; the stigmas acute and ferrate, with a blueish keel^s. It derives the trivial name from the smell of the flowers, which is very like that of

Elder in bloom^t. It flowers at the end of may, and in june; is a native of the South of Europe; and was cultivated in 1748, by Mr. Miller^u. Mr. Curtis takes it to be the same with *Iris Camerarii* of Parkinson (parad. 181.); and if so, it was probably known to our gardens in his time.]

12. The roots of this are very thick, fleshy, and divided into joints, spreading just under the surface of the ground; they are of a brownish colour on their outside, but white within; the leaves arise in clusters, embracing each other at their base, but spread asunder upwards in form of wings; they are a foot and a half long, and two inches broad, having sharp edges, ending in points like swords; the stalks between these, which are a little longer than the leaves, having at each joint one leaf without a foot-stalk; these diminish in their size upwards; the stalks divide into three branches, each of which produces two or three flowers one above another at distances, each inclosed in a sheath; they have three large violet-coloured petals which turn backward, and are called falls; these have beards near an inch long on their midrib towards their base, and have a short arched petal which covers the beard, with three broad erect petals of the same colour, called standards; the stamina lie upon the reflexed petals. Under each flower is situated an oblong germ, which turns to a large three-cornered capsule, filled with large compressed seeds. This flowers in june, and the seeds ripen in august.

There is a variety of this with blue standards and purple falls, and one with pale purple standards, another with white, and a third with a smaller flower, but these are accidental varieties which have come from seeds.

[It differs from *I. germanica*, to which it bears some resemblance, in having the larger petals folded back in the middle, of a deeper violet colour, with white or yellowish veins, and blueish in the middle; and the smaller petals and stigmas of a squalid yellow colour, and emarginate. The scape is divided at top, that is, the lower flowers are peduncled, it is striated, and about two feet high. The leaves are sharp and nerved^x.

Native of the South of Europe. Cultivated by Mr. Miller in 1768^y.

13. Stem frutescent, compressed, smooth, branching dichotomously, jointed, decumbent, somewhat upright at top, bracted, a foot high and more; branches alternate, elongated, like the scape, one-flowered. Bractes or spathes on the stem and branches alternate, compressed with a sharp keel, smooth, membranaceous at top, an inch long, shorter than the internodes. Leaves acute, nerved, shorter than the stem, a foot long. Corolla white; claws of the larger petals a little widened, bearded within, dotted with yellow. A yellow spot in the flexure. Border blunt. Claws of the smaller petals only half the width of the others, and without any spots: borders oblong, blunt, upright. Filaments connate at the base, awl-shaped, white. Stigmas blueish-white; outer lip crenulate, inner bifid; segments lanceolate, upright, shorter than the petals. Native of Africa, in the interior country of the Hot-tentots^z.

14. Root tuberous, creeping. Stems several, short, inclining upwards, compressed, leafy. Leaves scarcely six inches long, sharpish, a little curved like a sickle at the tips, entire, with a pale membranaceous margin. Flower generally solitary, a little shorter than the leaves, erect, of a pale purplish blue: outer petals drooping, obtuse, blue, with deeper blue spots, crested in the place of the beard with three longitudinal, elevated, waved ribs, variegated with orange and yellow; inner petals narrower, pointed, uniform in colour. Stigmas of the same colour as the petals, and half as long^a.

Native of North America, whence it was sent by Mr. Peter Collinson in 1756. It flowers in may^b.

15. Stem round, smooth, branched. Branches simple, elongated, naked, spreading very much, three-

^a Thunberg.

ⁱ Hort. kew.

^k Hort. kew.

^l Hort. kew.

^m Ibid.

ⁿ Hort. kew.

^o Ger. herb.

^p Thunberg.

^q Thunberg.

^r Thunberg.

^s Thunberg.

^t Thunberg.

^u Hort. kew.

^v Hort. kew.

^w Curtis.

^x Hort. kew.

^y Hort. kew.

^z Hort. kew.

^a Thunberg.

^b Hort. kew.

^c Thunberg.

^d Smith.

flowered or thereabouts. Leaves radical, six or seven, embracing, distich, short; there is a very short stem-leaf at each ramification. Flowers on long peduncles, pale purple, the smallest of any in the genus^c.

Native of Siberia. Introduced in 1784 by Mr. John Bell. It flowers in august^d.

16. Bulb striated, globular, fibrilled. Leaf single, sheathing, channelled, smooth, nerved, loose, hanging down, twice the length of the scape; which is single, upright, round, jointed, mostly one-flowered, smooth, a foot high: joints embraced by bractes resembling spathes. Flower terminating, solitary. Spathe two-valved, embracing the peduncle; the lower shorter, acute, smooth. Within this lies the unfolded flower, with two very thin, linear-oblong bractes. Corolla blue, with a yellow joint: claws of the larger petals broader, linear, dotted on the inside with blue, having a nectareous hollow at the base; border ovate, acute, very pale blue, with the joint bearded: claws of the smaller petals very narrow, convex on the outside, frequently having two opposite teeth below the joint; border from jointed spreading, linear awl-shaped: all the claws connate at the base, and inserted into the germ. Filaments half the length of the tube, connate at the base. Anthers yellowish. Germ ovate, six-grooved. Style three-cornered, incrassated, smooth. Stigmas linear: outer lip blunt, inner very long, acute, almost the length of the border.

Native of the Cape of Good Hope near Cape Town, Picketberg, &c.

17. Bulb the size of a hazel nut. Scape simple, round, jointed, upright, bearing one or two flowers, a foot and half in height. Leaf single, nerved, upright, with the tip hanging down, two feet long. Border of the larger petals white, suborbiculate, with a point; claws green on the outside, yellow within, dotted with black. Smaller petals several times shorter and less: claws convex on the outside, green, concave within, dotted with brown, the length of the larger ones, but narrower; segments lanceolate, divaricating, a line in length, the middle one of the three a little longer, white dotted with brown. Inner lip of the stigma bifid, the clefts ovate, blunt, only half the length of the larger petals, white, upright. It varies in the shape of the larger petals, and very much in the colours, blue, purple, yellow, white, and spotted.

Native of the Cape, on the hills below Duyvelsberg, in Swartland, and near Bergrivier^e.

Mr. Curtis, when he figured this species under the name of *J. pavonia* (*magaz. t. 168.*) had his doubts whether it was the *pavonia* of the *Systema vegetabilium*. He describes it as a small delicate Iris, about a foot and half high, with very narrow leaves, bearing on the top of the stalk one, or at most two flowers; three of the petals large and white, with a brilliant blue spot at the base of each, edged on the outer side with deep purple; the delicacy of the flower, and the eye-like spot at the base of three of the petals, render it one of the most striking plants of the genus. His figure is from a plant that flowered with Mess. Grimwood and Co. in June 1794; and they received it from Holland.—It had flowered, however, before in the Royal botanic garden at Kew, namely in 1776^f.

18. Scape jointed, flexuose, almost upright, branched at top, bracted, from a hand to a span in height. Leaf linear, from reflex-spreading, shorter than the scape. Petals connate at the base: claws of the larger ones obovate, greenish on the outside, with a thinner blue edge; pale blue within; a yellow spot, three-toothed, and the beard in a double line; borders blunt, violet, alternately a little narrower and shorter. Anthers saffron-coloured in front, black at the tip and on the back. Stigmas pale blue, shorter than the borders of the petals, cowl-two-lipped: outer lip linear, awned at the tip with five or six short bristles, and curved in; the inner shorter, bristly-multifid, like the petals of *Dianthus plumarius*. Sometimes, but very seldom, the scape is one-flowered, but it is mostly branched, with one-flowered and three-flowered branches.

Native of the Cape of Good Hope below Duyvelsberg^g.

19. Xiphium or bulbose-rooted Iris has the leaves channelled and convoluted, not only at the base, as in the other species, but the whole length of them; they are awl-shaped at the tip, and shorter than the scape. The flowers are blue, with emarginate petals^h.]

Mr. Miller makes two distinct species, which are here given as varieties. The *latifolium* (our *a*) he says, has much larger roots, with larger leaves, the flower-stalk is near twice the height, and the flowers are more than double the size.

There are many varieties of these, the most common colour is blue, deeper or lighter; but it is also yellow, white, blue with white or yellow falls, violet-coloured with blue falls, variegated, &c.

[Native of the South of Europe.—Dr. Nash, in his history of Worcestershire, informs us, that it was discovered by the late Dutchess Dowager of Portland by the river side near Fladbury, and in other parts of that countyⁱ.

Gerarde cultivated it, and says that he received it from his brother James Garret, Apothecary. He says, "it is dasht over, instead of the blew or watchet colour, with a most pleasant gold yellow colour, and is of smell exceeding sweet."

20. Root fleshy, the thickness of the thumb, spreading horizontally near the surface, blackish on the outside, reddish and spongy within, the upper part covered with numerous rigid fibres, the lower part sending down many long, whitish, wrinkled, stringy roots. Leaves from the root, two or three feet long, upright, an inch or more in breadth, striated, having a prominent longitudinal midrib, equal to the scape, deep green, smooth: stem-leaves shorter, forming a sheath at the bottom. Scapes from one to three feet in height, upright, alternately inclined from joint to joint, round or flattened a little, smooth and spongy. Peduncles axillary, flat on one side, and smooth; each sustaining two or three flowers, the two outer (when there are three) having one sheath, and the middle flower two. Corolla yellow: the three outer petals large, roundish-ovate, reflex, one-toothed on each side, streaked with purple lines at the base of the lamina, and having two small holes at the bottom of the claw. Anthers yellow with purplish edges, two-celled, opening beneath. Germ three-cornered, the angles blunt and grooved. Stigma much larger than the small petals, yellow, cut into fringed segments at the top^k. Dr. Withering says he should be tempted to describe the flower as having nine petals, and three styles connected longitudinally to the three innermost petals.

It is common in most parts of Europe, in marshy meadows and fens, by the sides of rivers, brooks, lakes, pools and ditches, flowering at the end of June, or the beginning of July.

It is called by English writers water Flower-de-luce, Yellow Flag, Water Flag, and provincially Skeggs or Lugs.]

21. Root thick, tufted, fibrous. Leaves grass-green, when broken emitting a strong odour, not much unlike that of hot roast beef at the first scent, but if smelt too close, becoming disagreeable. [Dr. Withering compares the smell of them to rancid bacon. They are acute and nerved, rather shorter than the scape; which is single, cylindrical, but angular on one side, jointed, sheathed with alternate spathaceous leaves, two feet high, bearing several flowers. Corolla of a lurid purplish ash-colour, not smelling in the night time: claws of the outer petals wrinkled and plaited on the under surface: inner petals larger than the stigmas, spreading^l.

Native of France, Italy, England: as near Hornsey; about Charlton wood, and between Eltham and Chislehurst in Kent; near Braintree and Woodford in Essex; Bath hills, Ditchingham, Norfolk; near Cherry-Hinton, Teversham, Fulborn and Triplowin Cambridge-shire; between Dunstable and St. Alban's; near Pershore in Worcestershire; and in all the South-West

^c Thunberg.

^d Hort. kew.

^e Thunberg.

^f M. S. Soland.

^g Thunberg.

^h Ibid.

ⁱ Withering.

^k Curtis.

^l Linneus.

counties very common: on hedge banks and sloping ground: flowering from the end of June to August. It runs much at the root and flowers sparingly. In English it is named Stinking Iris or Flower de-luce, Stinking Gladwyn or Gladdon.

22. Root white within, black without, the thickness of the thumb, having white fibres, and bristly at top, with the remains of leaves. Scape compressed, upright, jointed, sheathed with alternate leaves, many-flowered, the length of the leaves, or a little higher, a foot in length. Leaves narrow, sharp, curved in at the tip, nerved and smooth, as is the whole plant. Spathes membranaceous, acute, brownish, shorter than the peduncles, very thin at the edge and tip. Peduncles two or three inches long, round, slender, upright, one-flowered. Flowers elegant, but without scent. Claws of the outer petals channelled, green on the outside, yellow on the inside, streaked with dark purple; border flat, rounded-ovate, blunt, quite entire, pale at the base, then blue with deep-blue streaks: inner petals spatulate, blunt, upright, shorter, bluer and streaked. Stigmas bifid, blunt, of the same colour with the inner petals. Anthers violet-coloured^m.

Native of Virginia. It flowers here in June and July;—and was cultivated by Mr. Miller in 1758ⁿ.

23. Scape jointed, bifid at the top or simple, many-flowered, higher than the leaves, two feet in length. Leaves alternate, sheathing; the upper ones gradually shorter. Flowers blue, large^o.

Dillenius has described and figured two varieties of this, the first with the stigmas not crenated, and the second with the stigmas crenated; they differ also somewhat in colour.

Mr. Curtis remarks that this species has, for the most part, a stalk unusually crooked or elbowed, that it is the *pizza* of Mr. Miller, and that the *versicolor* of Miller is probably the *sibirica* of Linneus.

It is a native of North America, and was cultivated in 1732 by James Sherard, M.D. It flowers in May and June^p.

24. Scape round or roundish, covered with the sheaths of leaves, many-flowered, longer than the leaves, a foot high. Leaves falcated, acute, striated, nerved. Spathes membranaceous at the edge. Larger petals dilated at the base with dusky veins; lesser snowy-white, with yellowish veins at the base. Stigmas snowy-white. Capsule hexagonal, with blunt angles^q.

This being the highest of the species of Iris cultivated in our gardens, Mr. Curtis has named it *Tall Iris*.

Notwithstanding Mr. Miller's description of his *orientalis* accords very badly with this, they have been generally considered as the same plant, distinguished by the name of *Pococke's Iris*, Dr. Pococke having first introduced it, according to Mr. Miller, from Carniola; but that is probably a mistake, for it is a native of the Levant^r; and Mr. Miller accordingly names it *orientalis*.

It was cultivated by Mr. Miller in 1759^s. It flowers in July.

25. Long-leaved Iris is a native of Siberia, and was introduced in 1780 by Chevalier Pallas. It flowers from July to September^t.

26. Scape simple, many-flowered, a foot high. Leaves two, or one only, from the middle to the end gradually but much attenuated, margined, nerved, striated, rigid, smooth. Spathes like the leaves, but broader, membranaceous at the tip, a span long.—Native of the Cape of Good Hope, in Hauteniquas near Wolfwekraal, and Langekloof near Keurbooms rivier^u.

27. Stem round at bottom, the thickness of a finger, very much branched at top, and many-flowered. Branches subtrichotomous, paniced, compressed and angular, flexuose, smooth. Root-leaves with long sheaths, nerved, attenuated at the tip, smooth, about the same length with the stem. Stem-leaves gradually

shorter, and dwindling into spathes. Flowers yellow, small. Bractes at the ramifications ovate, acute, membranaceous, shorter than the branches and peduncles. Native also of the Cape, in the sands of Swartland^v.

28. Root composed of two bulbs, one over the other, as in Gladiolus and Crocus. Scape very short, simple, the whole sheathed with leaves, a finger's length. Leaves several, attenuated at the tip, reflex, waved, longer than the scape. Petals purple, with a yellow spot in place of the beard^x.

Native of Spain and Portugal. Cultivated in 1597 by Gerarde. It flowers in May^y. Gerarde and Parkinson name it Spanish Nut. Ray found it in Sicily flowering in the month of April.]

29. This has tufted fibrous roots, from which arise many grass-like leaves about nine inches long; from between them come out the stalks, which are shorter than the leaves, and support one purple flower with blue standards. It flowers in May, but seldom produces seeds in England.

[Scape covered with alternate spathes, simple. Leaves linear, nerved^a. Native of North America. Cultivated by Mr. Miller in 1739^b.]

30. Persian Iris has an oval bulbous root, from which come out five or six pale-green leaves, hollowed like the keel of a boat, about six inches long, and one inch broad at the base, ending in points. Between these the flower-stalk arises, which is seldom above three inches high, supporting one or two flowers, inclosed in spathes: these have three erect petals or standards, of a pale sky-blue colour, and three reflexed petals or falls, which on their outside are of the same colour, but the lip has a yellow streak running through the middle, and on each side are many dark spots, with one large deep-purple spot at the bottom.

[Linneus remarks, that the bulb puts forth a gem from two pairs of scales, between which are the leaves and a single flower in a simple spathe; that the leaves are subulate-channelled, and longer than the stem.

The leaves are striated and nerved, unequal, and a span in length. The larger petals are oblong, blunt, waved, subemarginate, convoluted; having a yellow line along the middle, with violet-coloured dots, and spots of the same at the tip: the smaller petals are linear oblong, patulous, white, convoluted: each lip of the stigma upright, pale blue; inner bifid, with lanceolate segments^c.

Native of Persia. Cultivated here in the time of Parkinson (1629.)^d, who remarks that it was then very rare, and seldom bore flowers.]

The Persian Iris is greatly esteemed for the beauty and extreme sweetness of its flowers, as also for its early appearance in the spring, it generally being in perfection in February or the beginning of March, according to the forwardness of the season. [Like the Hyacinth and Narcissus it will blow within doors in a water-glass, but stronger in a small pot, or sand or sandy loam, and a few flowers will scent a whole apartment^e.

31. Bulb ovate, tunicated, smooth, fibrose, the size of a hazel nut. Scape round, upright, almost simple, sheathed, jointed, a span or a little more in height. Leaf sheathing the scape for a considerable length at bottom, acuminate, striated, longer than the scape. Flowers terminating, one or two, upright. Outer spathe smooth, green with a red tip; the inner ones very thin, white. Claws of the larger petals yellow with the edge white, dotted with purple on both sides; joint even, saffron-coloured, with a purple circle; border ovate, blunt, spreading, yellow within, purple-nerved on the outside. Smaller petals lanceolate, blunt, yellow, streaked with dusky purple on the outside, narrowing gradually into the claws, all of which are connate at the base. Inner lip of the stigmas bifid; segments oblong, acute, the inner side straight, the outer produced, erect, yellow. Capsule acutely three-cornered, blunt.

Native of the Cape of Good Hope, on the hills below Duyvelsberg and Lewekopp^f.

^m Jacquin and Thunb.

ⁿ Hort. kew.

^o Thunberg.

^p Hort. kew.

^q Thunberg.

^r Thunb. Hort. kew. Curtis.

^s Hort. kew.

^t Ibid.

^u Thunberg.

^v Thunb.

^w Ibid.

^x Hort. kew.

^y Thunb.

^z Hort. kew.

^a Thunb.

^b Hort. kew.

^c Curtis.

^d Thunberg.

32. Scape filiform, generally simple, but sometimes divided and three-flowered, upright, from a hand to a span in height. It has commonly only one leaf; (but sometimes there are two) it is upright except at the tip, where it droops, and is twice as long as the scape. Flowers blue, small.—Native of the Cape.

33. Scape simple, covered with the sheaths of the leaves, which are few, but the sheaths are broad. Flowers terminating, pale blue: outer lip of the stigma very short and blunt: inner bifid, segments oblong. Capsule filiform, longer than the corolla.

Native of Siberia, in the sands of Dauria, and near the Wolga^g.]

34. This has narrow, flat, grass-like leaves, about a foot long, of a light-green colour; between these arise the stalks about six inches high, having two narrow leaves much longer than the stalks. Flowers two or three, small: the petals have a broad yellow line with purple stripes; the three falls are of a light purple colour striped with blue, and have a convex ridge running along them: the others are of a reddish purple variegated with violet; they have a scent like fresh plums. Capsule short, with three borders or wings, [hexagonal by means of six deep grooves^h.

Native of Austria. Cultivated in 1597 by Gerarde. It flowers in Juneⁱ.

35. Root knobbed, blackish on the outside, whitish within, with long pale fibres. Stem round very slightly compressed, straight or a little flexuose, from two to three feet in height, taller than the leaves. Flowers commonly two, on short peduncles, each involved in its spathe; sometimes there are three; they have no scent. Colour blue-purple; but under the stigmas the reflex petals are more inclined to red: upright petals flat, and usually quite entire.] Mr. Miller says that the flowers have light blue standards, and purple variegated falls, having a broad white line in the middle instead of the beard. [Capsule oblong, acuminate, hexangular, three of the sides alternately thrice the breadth of the other three^k.

Mr. Curtis remarks, that it is distinguished by the narrowness of the leaves which emit a disagreeable smell when bruised; by the fine rich purple colour of the flowers inclining to blue, and by its hexangular germs.

Native of Germany and Austria, in wet meadows. Cultivated by Mr. Miller in 1759. It flowers in July^l.

36. Scape a foot high or more, dividing at top, three-flowered or many-flowered, longer than the leaves; which are nerved and flat. Flowers blue, in brown, scariose spathes^m. The inner petals are upright. Germ trigonal, not grooved at the anglesⁿ. It is distinguished from the other sorts usually cultivated in our gardens by the superior height of its stems, and the narrowness of its leaves; by the latter circumstance however, it is often confounded with the *graminea*^o.

Native of Siberia, Austria, and Switzerland. Cultivated by Gerarde in 1596. It flowers in May and June^p.

37. Root oblique, knobbed, covered with brown filaments from the remains of the leaves, fibrose beneath, above producing in joints abundance of small narrow bulbs. Leaves linear-awl-shaped, the third part of an inch in breadth; root-leaves five, stem-leaves few, flexuose at the top or in the middle. Stem fistular, many-flowered. Spathe ferruginous, two-valved or many-valved. Flowers terminating, three; the middle one peduncled; the others, as also the lower solitary one, subsessile. Corolla white; the reflex petals have the border toothletted, the claw linear, yellow with violet-coloured veins; the upright petals shorter by half, wholly white, waved, with very narrow claws. Stigmas large, white, deeply bifid, crenated. Capsule ovate-oblong, trigonal, with wrinkled valves^r. It approaches very near to the preceding species^s.

38. Root solid, subbulbose, surrounded by whitish fibres, and throwing out other tubers. Stem upright, roundish, two feet high, simple. Root-leaves acuminate, quite entire, somewhat rigid, distich, flat, keeled at the base, above simple, from upright spreading, few. Flowers few, coming out successively from the same spathe, yellow, without scent, peduncled; the petals have a black shining glandular hole or pit, like that which is common to several species of *Ranunculus*.

Native of Martinico, in moist mountainous woody pastures; flowering in November and December. It was raised from seed at Vienna about the year 1760, but had not flowered there in three years after^t.

Native also of the island of St. Lucia, whence it was introduced into the royal garden at Kew in 1782, by Mr. Alexander Anderson. It flowers in June^u.

39. Scape round, jointed, villose, simple, a foot high, sustaining one or two flowers. Leaf somewhat channelled, striated, villose, the length of the scape. Spathes acute, striated, smooth, two inches long. Peduncles subancipital, one-flowered, smooth. All the petals united at the base: the three outer several times bigger than the others, ovate, obtuse, entire; the three inner much narrower and shorter by half, lanceolate, acute. Nectaries three within the larger petals; each an ovate, blunt leaflet, petal-shaped at the base. Filaments connected beyond the middle into a cylinder, linear-subulate, several times shorter than the corolla, purplish. Anthers pressed close to the stigmas, orange-coloured with two brown lines. Stigmas the length of the stamens. Capsule trigonal.

This beautiful flower is orange-coloured, with black spots and dots at the base, and a heart-shaped blue spot above the base, which at bottom is tomentose and black.

Native of the Cape of Good Hope, in Swartland and elsewhere among bushes^v.

40. Scape grooved, flexuose, divided at top, a hand or more in height. Leaves radical, alternate, reflex, equal to or longer than the scape. Flowers terminating, alternate, the lower peduncled, three or four in number. Corolla six-petalled. Alternate petals larger, border ovate obtuse veined, yellow and very finely dotted at the flexure: the smaller petals a little narrower, scarcely shorter than the others, like them and spreading. Anthers ovate, black; pollen orange bursting from the outer side. Outer lip of the stigma very short, yellow; inner bifid, yellow, segments lanceolate, acute, the length of the petals. This varies in the colour of the corolla, yellow with blood-red veins, blue, and flesh-colour.

Native of the Cape of Good Hope, on the hills near Cape Town^x.

41. Bulb ovate, coated, the size of a pea. Scape upright, hairy, divided, many-flowered, a hand in height. Leaves convoluted, flexuose and recurved, marked on the outside with lines and hairy; within pubescent; the length of the scape or a little longer; the upper ones shorter; the uppermost spathe-form. Spathes in pairs, sheathing, resembling the leaves, hairy. Peduncles three-cornered, two together from the same point, three or five, incrassated, smooth, unequal. Flowers expanding successively. Claws of the larger petals broader, with a nectareous excavation at the base, green variegated; border ovate, acute, with a green circle at the knee: claws of the smaller petals linear, border ovate-oblong, acute: all the claws connate at the base. Inner lip of the stigmas bifid; segments oblong, acute. There are several varieties of this species also; as wholly yellow, except the green circle mentioned above; with the petals and pistils red within, a yellow spot at the knee, and a dusky circle; and the larger petals yellow, with a green circle at the knee, the borders of the lesser petals and inner lips of the stigmas blood-red.

This species differs from *I. ciliata* in having the whole leaves rough-haired, and the alternate borders of the petals ovate.

Common on the hills about Cape Town^y.

^g Thunberg. ^h Jacquin. ⁱ Hort. kew.
^k Jacquin. ^l Hort. kew. ^m Thunberg. ⁿ Linn.
^o Curtis. ^p Hort. kew. ^q Murray in comm. gott.
^r Murr. in syst.

^s Jacquin. ^t Hort. kew. ^u Thunberg. ^v Ibid.
^w Ibid.

42. Scape deeply radicate, round, flexuose, divided at top, a foot high. Leaf sheathing the scape at bottom for a great length, erect but hanging down at the tip, thrice the length of the scape. Flowers solitary or several, alternate, chiefly directed one way. Petals connate at the base. Filaments awl-shaped, white, connate at the base like the petals. Anthers grooved in front, yellow or white. Outer lip of the stigma obtuse, quite entire: inner bifid, segments lanceolate, acute; notchletted on one side which is produced, from upright bent in, the length of the smaller petals. It varies with blue, white and yellow flowers, the first having dusky streaks, and the last spotted.

Common at the Cape, in the sands of Groenekloof, Swartland, the low plains near Cape Town, Duyvelsberg, &c.²

43. Scape divided, almost upright, many-flowered, a span in height. Branches or peduncles flexuose, spreading very much, hirsute, from one to three-flowered. Leaves waved, nerved, hanging down at the tip, longer than the scape. Smaller petals narrower by half than the others, ovate-lanceolate: tube greenish, connate at the base: all the borders dull-coloured or rufescent, with a red keel, bright yellow at the bending. Anthers blue. Inner lip of the stigma bifid; segments lanceolate, with the keel blue on the outside, a little shorter than the borders.

Native of the Cape, below Duyvelsberg, near Cape Town^a.

44. Scape round, divided at top, jointed, many-flowered, a foot and more in height. Leaves setaceous-attenuated at the tip, nerved, upright, equalling the scape. Flowers large, handsome, blue with yellow at the flexures. Spathes scarious at top, jagged. It differs from *I. ramosa* by its branched scape and simple peduncles.

Native of the Cape, between Sondagsrivier and Vischrivier^b.

45. Scape round, smooth, jointed, from flexuose upright, divided at top, glutinose, purplish, a foot high. Peduncles alternate, flexuose, glutinose, one-flowered. Leaves few, upright, longer than the scape. Borders of the larger petals ovate, bluntish, whitish at the flexure: smaller petals a little narrower and shorter; claws greenish white within and without. Inner lip of the stigma bifid; segments lanceolate, shorter by half than the borders of the larger petals: outer lip bifid, half the length of the other.

Native of the Cape, in Saldahna bay^c.

46. Scape jointed, from flexuose-upright, divided at top, glutinose, many-flowered, a foot and more in height. Leaf single, attenuated at the tip, striated, smooth, shorter than the scape. Spathes sheathing the joints, striated, smooth. Flowers solitary on peduncles. Peduncles from sheaths with the scape two, filiform, flexuose, spreading, viscid, an inch and more in length. Corolla reflex, yellow all over. The three larger petals blunt, with red dots at the flexure. Stigmas yellow: outer lip very small; inner bifid: segments lanceolate, acute, the length of the smaller petals.

Native of the Cape, near Bergrivier, &c.^d

47. This has a tuberous root, as the name implies. There arise from it five or six long narrow four-cornered leaves, and from between these the stalk, supporting one small flower, of a dark purple colour. It flowers in april, but does not produce seeds in England.

[Native of the Levant. Cultivated in 1597, as appears from Gerarde^e.

Linneus remarks that this differs from its congeners not only in having tuberous roots and four-cornered leaves, but the three inner petals awl-shaped, and all parts of the flower very minute, the three segments of the stigma bifid beyond the middle, and the colour of the flower greenish.

48. Scape jointed, striated, smooth, upright, a foot high. Leaves nerved, shorter than the scape. Spathes like the leaves, obverse, gradually shorter. Flowers

from the axils of the spathes. Corollas one-petalled, white.

Native of Japan. Thunberg originally took it for the *squalens* of Linneus.

49. Scape striated, smooth, upright, a foot high or more. Leaves radical, nerved, smooth, attenuated at the tip, equal to the scape. Spathes like the leaves, gradually shorter. Flowers about two, subterminating. Corolla dusky-netted.

Native of Japan, where it was found by Thunberg, and supposed by him at first to be the same with *I. sibirica* of Linneus.

50. In the Flora Japonica Thunberg took this to be *I. graminea* of Linneus; but the scape is round or columnar, not two-edged or ancipital; and the germs are hexagonal.

Native of Japan^f.

Uses of the Iris.

Most of the species are cultivated in flower-gardens for their beauty, and would attract more regard, were it not for the facility with which they are propagated.

Many of the African sorts, especially the *edulis*, furnish nutriment both to men and monkeys: the bulbs with the scapes collected in bundles and gently boiled are esteemed pleasant and nourishing.

The roots of Iris are recommended for their medical qualities by Dioscorides and the Arabians: those of *Florentina*, *Germanica*, and *Pseudacorus* are still used in medicine^g.

The root of *Iris Florentina* is extremely acrid, and when chewed excites a pungent heat in the mouth, which continues some hours: on being dried, this acrimony is almost wholly dissipated, the taste being slightly bitter, and the smell agreeable, and approaching to that of Violets. No essential oil has hitherto been obtained from this root, but spirituous tinctures of it contain more of its virtues than watery infusions. The fresh root is a powerful cathartic, and for this purpose its juice has been employed in the dose of a dram and upwards in dropsies. It is now chiefly used in its dried state, and ranked as a pectoral, or expectorant, and hence has a place in the Trochisci amyli of the Lond. Pharm. We have however no evidence of its expectorant powers, and therefore must consider it as valuable only for the pleasantness of its perfume, and the flavour which it communicates.

The root of *Iris Pseudacorus* or Common Yellow Water-Flag had formerly a place in the London Pharm. under the name of *Gladiolus luteus*. It has an acrid burning taste, and the juice on being snuffed up the nostrils produces a great heat in the mouth and nose, accompanied by a copious discharge from these organs: hence it is recommended as a sialogogue and an errhine. The root is such a powerful astringent, that it has been used instead of galls in making ink, and also for the purpose of dying black: and from the same quality, it has also been used successfully in diarrhoeas: when given with this intention, the root should be well dried; the fresh root and its juice being so strong a cathartic that eighty drops of the latter produced repeated evacuations after jalap, gamboge, &c. had failed: this dose was given every hour or two in a little syrup of buckthorn, and had very immediate effects; causing the patient to discharge by stool several Scots pints of water in the course of the night. By continuing its use in an increased dose it cured an inveterate dropsy. Hence Bergius says "*Virtus recent. hydragoga, purgans; siccata. adstringens.*" The expressed juice is likewise said to be an useful application to serpiginous eruptions and scrophulous tumours^h.

The *Iris Germanica* or Common blue Flower de Luce possesses similar qualities; the fresh roots being a strong irritating cathartic: in this intention their fresh juice may be given in hydropic cases in doses of one or two drams to three or four ounces, diluted largely with watery or vinous liquors, to prevent its inflaming the throat. The remarkable differences in the dose, as directed by different practitioners, appear to arise

² Thunberg.

^a Ibid.

^b Ibid.

^c Ibid.

^d Ibid.

^e Hort. kew.

^f Thunb. in Linn. transf.

^g Thunb. diss.

^h Woodville.

from this circumstance; viz. that some have employed the juice in its recent turbid state, loaded with the acrimonious cathartic matter of the root, while others used such as had been depurated by settling, and which had deposited its more active and acrimonious parts¹.

The root of Flower de Luce suspended in wine or beer keeps the latter from growing stale, and communicates a pleasant taste and smell to the former. The juice is also sometimes made use of as a cosmetic, and for removing freckles.

A most beautiful paint or colour is prepared from the flowers in the following manner; viz. the flowers are collected before they are fully expanded, and are to be bruised in a stone mortar with a wooden pestle: then put into a glass, and placed for some days in a cellar or other moist place: after the space of about a fortnight the mass, which is now become liquid, is to be set over the fire in a glass pot, till about a third part is consumed; then some roche alum is to be put into it, more or less, till it becomes clear, and acquires its fine blue colour; after which it is poured into shells for use, as a water colour.

Iris foetidissima or Stinking Gladdon. The country people in some parts of England are said to purge themselves with the decoction of this plant. Those who would not have it work too strongly, make an infusion of the sliced roots in ale; and some take the leaves, which are more convenient for tender stomachs. The juice of the root has also been used as an emmenagogue as well as for cleansing eruptions of various kinds.]

PROPAGATION AND CULTURE.

All the hardy sorts of Iris are generally propagated by parting their roots, which most of them multiply fast enough. The best time to remove and part the roots is in autumn, that they may get good root before the spring, otherwise they will not flower strong the following summer. All those sorts which spread much at their roots should be transplanted every other year, to keep them within bounds, otherwise they will spread so much as to become troublesome, especially if they are planted near other flowers; indeed, the large growing kinds are most of them too spreading for the flower-garden, so are only fit to fill up the spaces between trees and shrubs in large plantations, where they will have a good effect during the time of their flowering.

The third, fourth, sixth, twenty-third, twenty-fourth, thirty-fourth, thirty-sixth, and some others grow in less compass, so may be admitted into the large borders, or in clumps of flowers in the pleasure-garden, where they will add to the variety. The fourth sort should have a warmer situation, being a little tender, but all the other sorts will grow in almost any soil or situation; these may all be propagated by seeds, which should be sown soon after they are ripe, then the plants will come up the following spring; but if the seeds are sown in the spring, they will lie a year in the ground before they vegetate: when the plants come up they must be kept clean from weeds, and the following autumn should be transplanted into beds at ten inches or a foot distance, where they may remain till they flower, which will be the second summer after transplanting; but as most of the sorts are so easily propagated by their roots, few people care to wait for seedling plants, unless of those sorts which are scarce.

[4. The Chalcedonian Iris flowers well in favourable situations, but succeeds best in a loamy soil and sunny exposure, with a pure air: moisture, which favours the growth of most of the genus, is injurious, and sometimes even fatal to this species. As it rarely ripens seeds with us, it is generally increased by the roots. Being liable to be destroyed by seasons unusually severe, it will be prudent to place a few roots of it in pots, either in a green-house or hot-bed frame during the winter: or it may be had of the importers of bulbs from Holland at a reasonable rate. It bears forcing well^k.]

¹ Lewis.

^k Curtis.

19, 30. Xiphium or Bulbous Iris and Persian Iris are also propagated by offsets from the roots. The bulbs of the former need not be taken up oftener than every other year; and of the latter every third year: this should be done soon after the leaves decay, otherwise they will send out fresh fibres: nor should they be kept above a month out of the ground, because they will shrink, and flower weakly the following year.

They may also be propagated by seed in the same manner as the Hyacinth: and this is the only way to obtain varieties of the Xiphium. The Persian Iris does not vary even from seeds.

These flowers thrive best in a light sandy loam; and if it be taken from a pasture ground with the sward, laid in a heap to rot, it will be still better; for these bulbs do not delight in a rich dunged soil: nor should they be too much exposed to the sun, but in an east border, they will thrive and flower extremely well.

In propagating the Persian Iris from seed, the boxes in which the seeds are sown, should be put under a garden frame in winter, to shelter them from hard frost.

47. The Snake's-head Iris is propagated by the roots, which send out offsets; these may be taken up and transplanted when their leaves decay, but should not be kept too long out of the ground. If these are planted in a deep loose soil, the roots will run down, and be lost in a few years where they are not disturbed, so they should be annually transplanted, and have a shallow soil: they are hardy in respect to cold, and require no farther care but to keep them clean from weeds.

They flower best when planted to an east aspect. If they are to be increased they should not be removed oftener than once in three years. The distance which they should be allowed is six inches square, and they should be planted three inches deep in the ground. As they multiply pretty fast by the roots few persons raise them from seeds. This however may be done in the way directed for the Bulbous Iris and Hyacinth. In light land it will be proper to lay rubbish in the bottom of the border where the Iris is planted, to prevent the roots from running deep into the ground; in which case they seldom produce flowers.

[The Cape Irises must be kept in the dry stove; and increased and managed in the same manner as other Cape bulbs.

IRIS. See *Ferraria* and *Moræa*.

IRON-WOOD. See *Fagara* and *Sideroxylon*.

IRON-WORT. See *Galeopsis* and *Sideritis*.

IRSIOLA. See *Cissus*.]

ISATIS. (*Isatis* of *Dioscorides*. *Isatis* of *Pliny*. Derivation unknown.)

Lin. gen. n. 824. Reich. 888. Schreb. 1072.

Tournef. 100. Juss. 242. Gærtn. t. 142.

Class. 15. 1. Tetradynamia Siliculosa.

Nat. order of *Siliquosæ* or *Cruciformes*.—*Cruciferae*, Juss.

GENERIC CHARACTER.

CAL. Perianth four-leaved: leaflets ovate, rather spreading; coloured, deciduous.

COR. four-petalled, cross-shaped. Petals oblong, obtuse, spreading, gradually attenuated into the claws.

STAM. Filaments six, upright-spreading, length of the corolla: of these two are shorter. Anthers oblong, lateral.

PIST. Germ oblong, ancipital, compressed, length of the shorter stamens. Style none. Stigma obtuse, headed.

PER. Silicle oblong, lanceolate, obtuse, compressed, ancipital, one-celled, not gaping, bivalve: valves navicular, compressed, keeled, deciduous.

SEED single, ovate, within the centre of the pericarp.

ESSENTIAL CHARACTER.

Silicle lanceolate, one-celled, one-seeded, deciduous, bivalve: valves navicular.

SPECIES.

1. *Isatis tinctoria*. Dyer's Wood.

Lin. spec. 936. Reich. 2. 289. Fl. suec. n. 614.

hort. cliff. 341. Hudf. angl. 299. Wither. arr.

717. ed. 3. 562. Engl. bot. t. 97. Gærtn. fruct.

2. 294. Hall, helv. n. 523. Gmel. sib. 3. 250.

n. 64.

n. 64. *Pollich pal. n. 645. Allion. pedem. n. 943. Krock. filif. n. 1105.*

I. sylvestris f. angustifolia. *Baub. pin. 113.*

I. sylv. *Fuchf. hist. 332. Camer. epit. 410. Dod. pempt. 79. 2. Lob. ic. 1. 352. 1. Baub. hist. 2. 909.*

Glaustum sylvestre. *Ger. emac. 491. 2.*

β. I. fativa. *Fuchf. 331. Dod. pempt. 79. 1.—f. latifolia. Baub. pin. 113. Blackw. t. 246. Zorn. ic. 191. Sabb. hort. 4. t. 5. Mor. hist. f. 3. t. 15. f. 10.*

I. f. Glaustum fativum. *Baub. hist. 2. 909. 2. Ger. emac. 491. 1. Park. theat. 600. 1. Raji hist. 842. syn. 307. Petiv. brit. t. 48. f. 9. Lob. ic. 351. 2.*

Root-leaves crenate, stem-leaves sagittate, filicles obcordate.

2. *Ifatis lusitanica. Portugal Woad.*

Lin. spec. 936. Reich. 2. 289. Gmel. it. 3. 308.

Herm. lugdb. 678. Tournef. cor. 14. Buxb. cent. 1. 4. t. 5.

Root-leaves crenate, stem-leaves sagittate, filicles submentose.

[3. *Ifatis armena. Armenian Woad.*

Lin. spec. 936. Reich. 2. 289. Tournef. cor. 14.

Buxb. cent. 1. 3. t. 4.

Leaves quite entire cordate blunt behind, filicles cordate.]

4. *Ifatis ægyptiaca. Egyptian Woad.*

Lin. spec. 937. Reich. 2. 290.

All the leaves toothed.

[5. *Ifatis alpina. Alpine Woad.*

Allion. pedem. n. 944. t. 86. f. 2.

Leaves lanceolate half embracing cordate, filicles ovate.

DESCRIPTIONS, &c.

1. Our common Woad is a biennial plant, with a fusiform, fibrose root. Stem upright, round, smooth, woody at bottom, branched at top. Root-leaves ovate-lanceolate, on long footstalks; down which they run a little. Stem-leaves alternate, quite entire, embracing, smooth, from two to three inches long, and scarcely half an inch in breadth. These are sometimes very slightly toothletted: and a few hairs are sometimes found both on the stem and leaves. Flowers small, terminating the stem and branches in a close raceme. Both corolla and calyx yellow: petals notched at the end. Seed-vessels on slender peduncles, hanging down, chestnut-coloured or dark brown and shining when ripe, of an oblong elliptic form, near half an inch long and two lines wide, compressed at top and on the sides into a sharp edge, swelling like a convex lens in the middle, with a straight longitudinal suture on each side, one-celled, two-valved, but hardly opening spontaneously: valves of spongy substance like cork, and boat-shaped. Seed smooth, striated a little, two lines long, and three quarters of a line wide, yellow or brownish yellow when ripe: it has only a single membranaceous coat. Embryo curved, yellowish. Cotyledons ovate, fleshy, plano-convex. Radicle subcylindrical, bent in upwards, lying on the back, not on the cleft of the cotyledons, superior^a.

Gærtner remarks, that the situation of the radicle in the *filiculosa* is various: being centrifugal in all those which contain several seeds; generally superior in one-seeded filicles; seldom centripetal; and in *Cakile* alone inferior.]

Mr. Miller thus describes the cultivated plant, which however differs little from the wild one except in luxuriance. The lower leaves are of an oblong oval figure, and pretty thick consistence, when growing in a proper soil; they are narrow at their base, but broad above, and end in obtuse roundish points; are entire on their edges, and of a lucid green. The stalks rise near four feet high, dividing into several branches, with arrow-shaped leaves, sitting close: the ends of the branches are terminated by small yellow flowers, in very close clusters. The pods are shaped like a bird's tongue, half an inch long, and one-eighth of an inch broad, turning black when ripe. It flowers in July, and the seeds ripen the beginning of September.

Mr. Miller has another species, which he names

^a Pollich, Gærtner, Engl. bot. Withering.

I. dalmatica or Dalmatian Woad, from the place of its growth. The lower leaves of this are spear-shaped and crenated; those on the stalk very narrow and arrow-pointed. The stalks branch more than those of the first sort, and rise higher. The flowers are larger, and of a brighter yellow colour. The seed-vessels are shorter, and broader at the ends, which are indented. [It is probably a variety of the common Woad, but no specimen of it occurring in Mr. Miller's herbarium, we cannot speak of it with certainty.

Dyer's Woad is a native of several parts of Europe, as on the coast of the Baltic and Ocean, by way-fides in Switzerland, &c.^b In England, in corn-fields and on the borders of them, as at New Barns near Ely, by the river Wear near Durham, &c. This makes us suspect that Woad is not an aboriginal with us, but has been naturalised by its frequent culture for dying; for, according to Linneus at least, it is a maritime plant. Yet if the plant which Pliny informs us the ancient Britains painted their bodies with be ours, which is very probable, it must be a native^c.

Woad is much used by dyers for its blue colour, and it is the basis of black and many other colours.

Queen Elisabeth, as Hume words it, took offence at the smell of this herb, and issued an edict prohibiting any one to cultivate it^d.

According to Hakluyt, we were dependent upon France for it in 1576^e. But in 1582 he says, "thus was Woad brought in, and came to good perfection, to the great loss of the French, our old enemies^f."

2. According to Linneus this is scarcely different from the preceding, only it is annual and smaller. Gmelin says the flowers are white.] Mr. Miller affirms, that there are very essential differences between them, particularly in the shape of the under leaves, which in this are narrow and spear-shaped, and those on the stalks are not more than half the breadth of those on the cultivated Woad. The stalks do not branch so much, and the pods are narrower, nor do the roots abide so long, for they generally die within the year. [Native of Portugal and the Levant. Cultivated by Mr. Miller in 1739^g.

3. Stem a foot high, loaded with yellow flowers.—Native of Armenia in dry pastures, by the sides of brooks^h.]

4. An annual plant, and a native of Egypt.

[5. Stem half a yard high, dividing into two, three or four short branches, supported by short leaves. Flowers in a sort of umbel, in short racemes, yellow, on yellow filiform peduncles. The calyx is also yellow. Corolla spreading very much, with the petals twice as long as the calyx, oblong-cordate, with linear claws. Filaments and anthers yellow; the latter sagittate. The flowers have hardly any smell. Silicle not wedge-shaped, but ovate and larger than that of *I. tinctoria*, from which it differs in having a perennial root, in the height of the whole plant, in the flowers being much larger, the filicles short, ovate, and also much larger.

Native of the mountains of Piedmontⁱ.]

PROPAGATION AND CULTURE.

None of the sorts are cultivated for use except the first, but are preserved only in botanic gardens. The second and fifth sorts are propagated by seeds sown in autumn, and when the plants come up they must be thinned, leaving them six inches apart, and kept clean from weeds: the summer following they will flower and produce ripe seeds, after which they soon decay.

3, 4. These are too tender to thrive in the open air in England. Sow the seeds on a hot-bed in the spring, and when the plants are fit to remove, transplant them on a fresh hot-bed; as soon as they have taken new root give them a large share of fresh air, to prevent their being drawn up weak. In this bed they may remain five or six weeks, by which time they will be fit to transplant into pots, which should be plunged

^b Linn.

^c Engl. bot.

^d Hist. ch. 44. see also Stow's annals.

^e Voy. 2, 46.

^f Voy. 2. 161. edit. 1599.

^g Hort. kew.

^h Buxbaum.

ⁱ Allioni.

into a moderate hot-bed, giving the plants plenty of air when the weather will permit, and supporting their stalks, which will otherwise trail on the ground: with this management the plants will flower in june, and ripen their seeds in september.

1. The first sort which is propagated for use, is sown upon fresh land which is in good heart, for which the cultivators of Woad pay a large rent; they generally chuse to have their land situated near great towns, where there is plenty of dressing, but they never stay long on the same spot, for the best ground will not admit of being sown with Woad more than twice; for if it is oftener repeated, the crop seldom pays the charges of culture, &c.

Those who cultivate this commodity, have gangs of people who have been bred to this employment, so that whole families travel about from place to place, wherever their principal fixes on land for the purpose; but these people go on in one track, just as their predecessors taught them; nor have their principals deviated much from the practice of their ancestors, so that there is a large field for improvement, if any of the cultivators of Woad were persons of genius, and could be prevailed on to introduce the garden culture so far as it may be adapted to this plant; this I know from experience, having made numbers of trials in the culture of this plant, therefore I shall insert them here for the benefit of those who may have ingenuity enough to strike out of the old beaten track.

As the goodness of Woad consists in the size and fatness of the leaves, the only method to obtain this, is to sow the seed upon ground at a proper season, and allow the plants proper room to grow, as also to keep them clean from weeds; which, if permitted to grow, will rob the plants of their nourishment. The method practised by some of the most skilful kitchen-gardeners in the culture of Spinach, would be a great improvement to this plant, for some of them have improved the round-leaved Spinach so much by culture, as to have the leaves more than six times the size they were formerly; and their fatness has been in the same proportion, upon the same land, which has been effected by thinning the plants when young, and keeping the ground constantly clean from weeds; but to return to the culture of Woad.

After having made choice of a proper spot of land, which should not be too light and sandy, nor over stiff and moist, but rather a gentle hazel loam, whose parts will easily separate: the next is to plough this up just before winter, laying it in narrow high ridges, that the frost may penetrate through the ridges, to mellow and soften the clods; then in the spring plough it again crossways, laying it again in narrow ridges; after it has lain some time in this manner, and the weeds begin to grow, it should be well harrowed to destroy them; this should be twice repeated while the weeds are young, and if there are any roots of large perennial weeds, they must be harrowed out, and carried off the ground. In june the ground should be a third time ploughed, when the furrows should be narrow, and the ground stirred as deep as the plough will go, that the parts may be as well separated as possible; and when the weeds appear again, the ground should be well harrowed to destroy them. Towards the end of july, or the beginning of august, it should be ploughed the last time, when the land should be laid smooth, and when there is a prospect of showers, the ground must be harrowed to receive the seeds, which should be sown either in rows with the drill plough, or in broadcast, after the common method; but it will be proper to steep the seeds one night in water before they are sown, which will prepare them for vegetation: if the seeds are sown in drills with a plough, they will be covered by an instrument fixed to the plough for that purpose; but those which are sown broadcast in the common way, must be well harrowed in. If the seeds are good, and the season favourable, the plants will appear in a fortnight, and in a month or five weeks after will be fit to hoe; the sooner this is performed when the plants are distinguishable, the better they will thrive, and the weeds being then young, will be soon destroyed. The method of hoeing these plants

is the same as for Turneps, with this difference only, that these plants need not be thinned so much; for at the first hoeing, if they are separated to the distance of three or four inches, and at the last to six inches, it will be space enough for the growth of the plants; if this is carefully performed, and in dry weather, most of the weeds will be destroyed: but as some of them may escape in this operation, and young weeds will arise, the ground should be a second time hoed in october, always chusing a dry time for this work; at this second operation, the plants should be singled out to the distance they are to remain. After this the ground will be clean from weeds till the spring, when young weeds will come up, therefore about a fortnight in april will be a good time to hoe the ground again, when the weeds will be young, and it may be performed in less than half the time it would require if the weeds were permitted to grow large, and the sun and wind will much sooner kill them; this hoeing will also stir the surface of the ground, and greatly promote the growth of the plants; if it is performed in dry weather, the ground will be clean till the first crop of Woad is gathered, after which it must be again well cleaned; if this is carefully repeated, after the gathering of each crop, the land will always lie clean, and the plants will thrive the better. The expence of the first hoeing will be about six shillings per acre; and for the after-hoeings half that price will be sufficient, provided they are performed when the weeds are young; for if they are suffered to grow large, it will require more labour, nor can it be so well performed; therefore it is not only the best husbandry to do this work soon, but it will be found the cheapest method; for the same number of men will hoe a field of ten acres three times, when it is performed while the weeds are young, as is required to hoe it twice only, because the weeds have longer time to grow between the operations.

If the land in which the seed is sown, should have been in culture before for other crops, so not in good heart, it will require dressing before it is sown, in which case rotten stable dung is preferable to any other; but this should not be laid on till the last ploughing before the seeds are sown, and not spread but as the land is ploughed, that the sun may not exhale the goodness of it, which in summer is soon lost, when spread on the ground. The quantity should not be less than twenty loads to each acre, which will keep the ground in heart till the crop of Woad is spent.

The time for gathering the crop is according to the season, but it should be performed as soon as the leaves are fully grown, while they are perfectly green; for when they begin to change pale, great part of their goodness is over; for the quantity will be less, and the quality greatly diminished.

If the land is good, and the crop well husbanded, it will produce three or four gatherings, but the two first are the best; these are commonly mixed together in the manufacturing of it, but the after-crops are always kept separate; for if these are mixed with the other, the whole will be of little value. The two first crops will sell from twenty-five to thirty pounds a ton; but the latter will not bring more than seven or eight pounds, and sometimes not so much. An acre of land will produce a ton of Woad, and in good seasons near a ton and a half.

When the planters intend to save the seeds, they cut three crops of the leaves, and then let the plants stand till the next year for seed; but if only one crop is cut, and that only of the outer leaves, letting all the middle leaves stand to nourish the stalks, the plants will grow stronger, and produce a much greater quantity of seeds.

These seeds are often kept two years, but it is always best to sow new seeds when they can be obtained. The seeds ripen in august; when the pods turn to a dark colour, the seeds should be gathered; it is best done by reaping the stalks in the same manner as Wheat, spreading the stalks in rows upon the ground, and in four or five days the seeds will be fit to thresh out, provided the weather is dry; for if it lies long, the pods will open and let out the seeds.

There are some of the Woad planters who feed down the leaves in winter with sheep, which is a very bad method; for all plants which are to remain for a future crop, should never be eaten by cattle, for that greatly weakens the plants.

[ISATIS INDICA. See *Indigofera tinctoria*.

ISCHÆMUM. (From *Isxw* reprimo, and *αἷμα* sanguis, on account of its virtue in stopping hæmorrhages.)

Lin. gen. n. 1148. Reich. 1254. Schreb. 1569. Juss. 30.

Class. 23. 1. Polygamia Monoecia.

Nat. order of Gramina, Gramineæ (Juss.) or Grasses.

GENERIC CHARACTER.

CAL. Glume two-flowered, bivalve, cartilaginous, placed transversely: Valves nearly equal: the exterior sub-ovate, gibbous, with bifid tip, sharp, the upper part of the back flat in the middle, striated, emarginated; the interior oblong, acuminate or awned at the tip, the back beneath the tip increased by a longitudinal membrane.

Floscule exterior male, interior hermaphrodite; each less than calyx.

COR. In the hermaphrodite a bivalve glume; valves membranaceous, thin, colourless; the exterior bellied, either mutic or awned, bifid to the very awn, acute: awn long, slender, jointed, tortile beneath; the interior lanceolate, acute, conduplicate at the edges.

In the male a bivalve glume, rather firmer, diaphanous, rather coloured; the exterior oblong, bellied, contracted above, sharp, mutic; the interior oblong, obtuse, with concave back, acutely margined, margin thinner.

Nectary in each two-leaved: leaflets small, spatulate, truncate-emarginate.

STAM. Filaments three, capillary, short. Anthers oblong, bifid on both sides.

PIST. In the hermaphrodite, Germ oblong. Styles two, capillary, erect, shorter than the corolla. Stigmas oblong, plumose, spreading, exerted.

PER. none. Calyx and corolla unchanged.

SEED (in the hermaphrodite) single, oblong, linear, convex on one side.

OBS. The flowers are spicated, and grow double: the one subsessile, the other seated on a broad glumaceous foot-stalk; each hermaphrodite. S.

ESSENTIAL CHARACTER.

HERM. Cal. Glume two-flowered. Cor. two-valved. Stam. three. Styles three. Seed one.

MALE. Cal. and Cor. as in the other. Stam. three.

SPECIES.

1. *Ischæmum muticum*.

Lin. spec. 1487. Reich. 4. 312. Retz. obs. 6. 34. n. 75. Tagadi. Rheed. mal. 12. 91. t. 49.

Leaves lanceolate, flowers awnless.

2. *Ischæmum aristatum*.

Lin. spec. 1487. Reich. 4. 312.

I. ciliare. Retz. obs. 6. 36. n. 78.

Leaves lanceolate, calyxes two-flowered, pedicels ciliate, each female flower with a twisted knee-jointed awn.

3. *Ischæmum imberbe*.

Retz. obs. 6. 35. n. 76.

Leaves lanceolate, florets naked, outer valve of the sessile calyx having two knobs on each side, and the corolla elongated by a twisted awn.

4. *Ischæmum barbatum*.

Retz. obs. 6. 35. n. 77.

Leaves lanceolate, calyxes two-flowered, bearded at the base, and ciliate at the edge, the edge of the sessile one with two knobs on each side, awn twisted, knee-jointed.

5. *Ischæmum murinum*.

Forst. fl. austral. n. 384. nov. act. upf. 3. 185.

Spike two-parted, calyx and seeds awned.

6. *Ischæmum involutum*.

Forst. fl. austral. n. 385.

Spike directed one way, awnless, four-flowered, involved in a leafy concave receptacle.

7. *Ischæmum importunum*.

Lour. cochinch. 646.

Panicle contracted, corollas one-valved.

8. *Ischæmum rugosum*.

Salisb. ic. t. 1.

Outer barren glumes transversely wrinkled, male and female florets fertile one only awned.

DESCRIPTIONS, &c.

1. Spike two-parted, imbricated, with alternate; simple, two-flowered, angular peduncles, pressed close to the culm. One flower terminates each peduncle, which is hermaphrodite; from a two-glumed one-flowered calyx: the second or lower flower is androgynous, sessile and inserted into each peduncle at the outer base, from a two-valved hardish calyx, the length of the florets, of which it contains two, one male, the other female. Stigmas thick, bearded. Peduncle of the spike clothed with leaves^a.

Culms a foot or eighteen inches high, leafy to the very spike, frequently branched to the base. Leaves two inches long, ciliate-spinulose on the edges. Spikes two, terminating, joined so as to appear one, or one divided to the base. Calyxes in pairs, cartilaginous; one sessile, two-flowered, androgynous; the other peduncled, male or neuter, one-flowered. The outer glume of the first ovate, flattish, spread out at the edge, bifid at the tip, the inner edge bent in: the inner glume equal in size, mucronate at the tip, the edge of one side only bent in. Outer corolla male, with one edge of the outer valve bent in, the other flat; but the inner valve has both edges bent in: inner corolla female, with the outer valve awnless; the inner ending in a short awn-shaped dagger-point, with both edges bent in. Stigmas two, thick, feathered, yellow; all the corolline glumes hyaline.—The second flower lateral, neuter or sometimes male, on a three-sided pedicel. Calycine valves three-sided and compressed. One glume of the corolla shortly awned^b.

Native of the East Indies, and of the isle of Tanna.

2. The structure of the spike and of the flowers is entirely the same as in the preceding, but the culm is higher, the spike longer, and the peduncle naked. The seeds are armed with a twisted awn, longer than the florets^c.

It is thus described by Retzius, under the name of *I. ciliare*.—Culm a foot and half high, branched, decumbent and rooting, with hairy joints. Leaves short, with the sheaths hairy at the edge. Peduncle naked. Spikes in pairs, an inch and half long, narrow, awned. Calyxes in pairs, two-flowered: one flower sessile; the outer glume cartilaginous, ovate, swelling, striated, both edges bent in; inner lanceolate, keeled; outer flower male, awnless, inner female awned, the awn having a long twisted knee-joint: the other flower peduncled, the peduncle three-sided, ciliated at the corners and on the upper edge; both glumes cartilaginous, keeled, sharp; one flower male, awnless, the other female and awned; the awn in both female flowers issues from the back of the corolla, which is cloven to the very base of the awn.

Native of China, where it was found by Osbeck^d.

3. Culms two feet high, leafy, somewhat branched. Leaves like those of the first sort, but longer. Spike also like that, but awned and without hairs. Calyxes in pairs; one sessile, two-flowered, the other peduncled, one-flowered, neuter. In the first, the outer valve is cartilaginous, flattish, lanceolate, with two knobs on each side, and both edges bent in; the inner membranaceous, acute, one edge spread out flat, the other bent in; outer corolla neuter? awnless, inner hermaphrodite, with an elongated twisted awn without any joint. In the second floret the outer valve is cartilaginous, lanceolate, with one edge bent in, the other flat; inner equal in length, acute, membranaceous, with both edges bent in; corolline glumes hyaline rufescent^e.

Native of the East Indies.

4. Culm and leaves as in the preceding, only the latter shorter. Spike longer, two-parted, awned, with the teeth of the rachis ciliate-bearded. Calyxes in pairs, each androgynous and two-flowered: one floret sessile, the outer valve cartilaginous, bearded at the base, having two or three little knobs on each side, lanceolate, bent in on both sides; the inner valve keeled, sharp, ciliated along both edges; florets two, the outer male, the inner female and awned, awn bent

^a Linn. spec.

^b Retzius.

^c Linn. spec.

^d Ibid.

^e Retzius.

as if broken, brown at the base, the rest white; glumes of the corolla hyaline, white, acute: the other floret peduncled; outer valve half-ovate, cartilaginous, naked, inner lanceolate, acute; flowers two, outer male, inner female or neuter, both awnless, glumes of the corolla as in the others. Native of Java, where it was found by Wennerberg^f.

5. Culm filiform, slender, simple, a long span in height. Leaves linear, acuminate, flattish, striated, dry, a span long. Sheaths thin, lax, with the little membrane very short, and having hairs placed on it. Peduncle filiform, upright, frequently naked. Spike closely converging, cylindrical, two inches long, resembling that of *Hordeum murinum*. Florets on one side, distich, in pairs, one sessile, the other pedicelled, minute, being scarcely a line in length besides the awns. Valves of the calyx almost equal; outer oblong-lanceolate, striated, flattish, one edge bent in and keeled, embracing the inner valve, having two awns at the tip, or solitary, terminated by little granules: inner valve more slender, with a longer awn: base of the glumes hairy. Valves of the corolla awnless, oblong, hyaline, less than those of the calyx. A minute membrane invests the germ, having a flexuose awn four times as long as the floret, which may be considered as the nectary.

Native of the isle of Tanna, on dry sand, near the coast^g.

6. Native of the Society isles, and elsewhere between the Tropics^h. Found in the island of Otaheite may 13th, 1774ⁱ.

7. Root perennial, simple, long, jointed, white, very tough. Culm three feet high, almost upright, round, hollow, thickish. Leaves awl-shaped, short. Flowers ovate, smooth, awnless, small. Calycine glume two-valved, two-flowered, one flower hermaphrodite, the other male. Corolla one-valved, embracing each flower. Seed awnless.

Native of Cochinchina, where it is a common weed, not easily eradicated^k.

8. Root annual. Plant from seven inches to a foot in height. Stems pale green, slender, decumbent, bent back, branched dichotomously, round, little jointed, smooth, striated, somewhat rigid. Leaves pale green, dense, except one or two of the upper ones, which are more remote. Spike terminating, dense, two-parted. Some of the flowers at the base of each flexure of the peduncle are fertile, others at the ends of the branchlets are abortive. Glumes six, upright: two opposite, equitant, barren; and four within these, much less, and fertile: in the abortive flowers they are smaller.

Native of the East Indies, and found by Koenig in Orissa, on the borders of the Rice-fields^l.

Cultivated by Richard Antony Salisbury, Esq. at Chapel-Allerton, before 1791.

ISCHÆMUM. See *Andropogon* & *Panicum*.

ISERTIA. (From *M. Isert*, a German, in the Danish service, as a Surgeon, on the coast of Guinea.)

Lin. gen. Schreb. n. 602. Guettardæ species, Aubl. 123.

Class. 6. 1. Hexandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth one-leaved, superior, coloured, four or six-toothed, permanent.

COR. one-petalled, funnel-form; tube long, cylindric, slightly curved. Border six-cleft: divisions subovate, rather upright, villose.

STAM. Filaments six, very short, within the mouth of the corolla. Anthers linear, fastened by the back, upright.

PIST. Germ inferior, roundish. Style filiform, surrounded at the base by a glandule. Stigma six-cleft.

PER. Pome subglobose, crowned with the calyx, succulent, six-celled; the shell of the cells fragile.

SEEDS several, small, angular, rough.

ESSENTIAL CHARACTER.

Cal. coloured, four or six-toothed. Cor. six-cleft, funnel-form. Pome subglobular, six-celled, many-seeded.

^f Retzius.

^g Forster in act. upf.

^h Forst. austral.

ⁱ Banks Mss.

^k Loureiro.

^l Salisb. ic.

SPECIES.

Iertia coccinea.

Lin. syst. ed. Gmel. 567.

Guettarda coccinea. Aubl. guian. 317. t. 123.

DESCRIPTION, &c.

This is a tree with a trunk ten or twelve feet in height, and about eight inches in diameter; the bark wrinkled, and of a russet colour, the wood light, and of a loose texture. Branches quadrangular, straight, with opposite branchlets, channelled and covered with a russet down; at their origin are two embracing stipules. Leaves opposite, disposed crosswise, smooth, entire, oval, ending in a long point, ash-coloured underneath, with russet-coloured nerves; the largest fourteen inches long, and seven wide: petiole cylindric, channelled, two inches long, swelling at the base, with two wide, sharp, deciduous stipules. Flowers terminating, in a large, straight panicle, the branches of which are opposite and subdivided, and come out from between two little scales. Each branchlet has three flowers, of which that in the middle is sessile. Calyx purplish, that part which borders the germ yellow. Tube of the corolla two inches long, bright red. Border yellow, covered on the inside with hairs of the same colour. Fruit a succulent red berry (or pome), the size of a Cherry, sweet and good to eat.

The wood is bitter. A decoction of the leaves is used by the Creoles in fomentations.

It is common in the island of Cayenne, and on the Continent of Guiana, flowering and bearing fruit great part of the year^a.

ISNARDIA. (So named by Linneus, in memory of Mons. Antoine Danti d'Isnard, member of the Academy of Sciences, and who published descriptions of some plants in their memoirs for 1716, &c.)

Lin. gen. n. 156. Reich. 164. Schreb. 207. Juss.

333. Dantia. Petit. gen. 49.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Calycanthemæ*.—*Salicariæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth bell-shaped, half-four-cleft, divisions ovate, spreading.

COR. none, unless you call the calyx such.

STAM. Filaments four, growing from the middle of the calyx. Anthers simple.

PIST. Germ inferior. Style simple, longer than the stamens. Stigma thickish.

PER. Capsule four-cornered, obtuse, covered by the calyx and crowned, four-celled, four-valved; valves obscurely keeled, thick, fungous, attenuated on the margin. Partitions opposite to the valves.

SEEDS very many, oblong, sharp, affixed to the pillar.

ESSENTIAL CHARACTER.

Cal. four-cleft. Cor. none. Caps. four-celled, covered by the calyx.

SPECIES.

1. *Isnardia palustris*.

Lin. spec. 175. syst. 162. Reich. 1. 340. Dalib.

per. 53. Gmel. it. 2. 199. Villars dauph. 2. 312.

Allion. pedem. n. 2066.

Dantia palustris. Petit. gen. t. 49. Guett. stamp. 2. 115.

Ocymophyllum. Buxb. act. petrop. 4. 277. t. 27.

Glaux major palustris, flore herbaceo. Moris. præl. 268. Raii hist. 1102. suppl. 635. Bocc. mus. 105.

t. 84. f. 2.

Alfina palustris rotundifolia repens, foliis portulacæ pinguibus. Lind. alfat. 114. t. 2. f. 6.

DESCRIPTION, &c.

This bears a great resemblance to *Peplis Portulaca*. It is creeping and floating. The flowers are axillary, opposite, sessile and green^b.

It is a native of Italy, France, Alsace, Russia, Jamaica and Virginia, in rivers, and is annual^c. According to to Allioni it is perennial.

Swartz has determined it to be a species of *Ludwigia*, frequent in the rivers of Jamaica, with petals to the flower, though fugacious. The plant without petals differs from this, just as in *Ammannia*.

ISNARDIA. See *Ammannia*.

^a Aublet.

^b Linn. syst.

^c Linn. spec.

ISOETES. (From *ισος* *similis*, and *ετος* *annus*: being alike or evergreen all the year. The name is taken from Pliny.)

Lin. gen. n. 1184. Reich. n. 1301. Schreb. n. 1620. it. scan. 420. Juss. 17.

Calamaria. Dill. musc. 541. t. 80.

Class. 24. 1. Cryptogamia Filices—or Miscellaneæ.

Nat. order of Filices or Ferns.

GENERIC CHARACTER.

* Male flowers solitary within the base of the inner leaves.

CAL. Scale cordate, acute, sessile.

COR. none.

STAM. Filament none. Anther roundish, one-celled.

* Female flowers solitary, within the base of the outer leaves of the same plant.

CAL. as in the Males.

COR. none.

PIST. Germ ovate, within the leaf.

PER. Capsule subovate, two-celled, concealed within the base of the leaf.

SEEDS numerous, globular.

OBS. Fructification immersed in the dilated base of the leaves, on the outside like a capsule with a streak resembling a suture, but without any partition on the inside; filled with many granular seeds.

ESSENTIAL CHARACTER.

MALE. Anther within the base of the frond.

FEM. Capsule two-celled, within the base of the frond.

SPECIES.

1. Isoetes lacustris. Common Quillwort.

Lin. spec. 1563. syst. 942. Reich. 4. 439. suppl. 448. it. scan. 417. t. 419. fl. suec. n. 951. Huds. angl. 462. Wither. arr. 3. 67. ed. 3. 760. Bolton fil. brit. 74. t. 41. Lightf. scot. 683. Fl. dan. t. 191.

Calamaria folio longiore & graciliore. Dill. musc. 541. t. 80. f. 2.

Subularia vulgaris erecta, fol. rigidissimo. Raii syn. 306. ed. 1. 2. at p. 1. fig.

Leaves awl-shaped, semicylindrical, curved back.

2. Isoetes coromandeliana. Coromandel Quillwort.

Lin. syst. 942. suppl. 447.

Leaves filiform, erect, smooth.

DESCRIPTIONS, &c.

1. Root fibrous; fibres numerous, simple, slender, striking deep into the mud. Leaves in thick tufts (eight or ten), from three or four to six or seven inches in length, extremely like young rushes, convex on the back, flat or slightly convex in front, at the base swelling into a kind of bulb, covered by a thin tender skin, which bursts and discovers itself to be filled with numerous minute whitish seeds, that appear spherical when examined in the microscope, roughish, somewhat transparent, and having three ribs meeting in a centre^a. The leaves are so brittle, that they break on the least attempt to bend them^b. Each leaf consists of several slender tubes, imbedded in a soft spongy substance, and furnished with transverse diaphragms that are very visible. When newly taken out of the water it is pellucid. The edges of the inflated base of the outer leaves, where the female flowers reside, form a thin fine membrane, which so closely embraces the gibbous part of the inner leaf, where the male flower is found, as to exclude the water. And by this admirable contrivance, the flowers of each sex are not only near each other, but though at the bottom of a lake, are kept perfectly dry. After the discharge of the seeds the outer leaves fall off and perish, and the next in order perform the same office a succeeding year; and the number of leaves is kept up by a supply of young ones from the centre^c.

Native of mountain lakes, in the north of Europe. Westmoreland. Cumberland. Wales and Scotland. Flowering from may to september.

2. This resembles the preceding very much, but is larger. The bulb consists of the membranaceous dilated bases of the petioles. The leaves are near a foot long, filiform, not semicylindric.

^a Woodw. Mfs.

^b Withering.

^c Bolton.

Native of Coromandel, in wet places that are inundated in the rainy season. Koenig^d.

ISOPHYLLUM. See Bupleurum.]

ISOPYRUM. (From *ισος* like, and *πυρος* a grain of wheat.—*Ισοπυρον* of Dioscorides.)

Lin. gen. n. 701. Reich. n. 759. Schreb. n. 955.

Gartn. t. 65. Juss. 233.

Class. 13. 7. Polyandria Polygynia.

Nat. order of Multifloræ.—Ranunculaceæ, Juss.

GENERIC CHARACTER.

CAL. none.

COR. Petals five, ovate, equal, spreading, deciduous.

Neetaries five, equal, tubular, very short, with a three-lobed mouth, the outer lobe larger, the receptacle inserted within the petals.

STAM. Filaments numerous, capillary, shorter than the corolla. Anthers simple.

PIST. Germs very many, ovate. Styles simple, the length of the germ. Stigmas blunt, the length of the stamens.

PER. Capsules several, lunulate, recurved, one-celled.

SEEDS very many.

OBS. Allied very nearly to Helleborus, but extremely different in habit. I. thalictroides has two or three germs only. R.

ESSENTIAL CHARACTER.

Cal. none. Pet. five. Neet. trifold, tubular. Caps. recurved, many-seeded.

SPECIES.

1. Isopyrum fumarioides. Fumitory-leaved Isopyrum.

Lin. spec. 783. syst. 518. Reich. 2. 670. hort. ups. 157. Gmel. fib. 4. 191. Willch. obs. n. 44. Kniph. cent. 12. n. 65. Gartn. fruct. 1. 312. Amm. ruth. 74. t. 12. (Helleborus).

Stipules awl-shaped, petals acute.

2. Isopyrum thalictroides. Meadow-rue-leaved Isopyrum.

Lin. spec. 783. syst. 518. Reich. 2. 670. mant. 408. Scop. carn. n. 695. Jacqu. austr. 2. t. 105. Krock. fles. n. 890. t. 22. Villars dauph. 3. 715.

Thalictrum batrachoides flore albo italicum. Bocc. mus. 84. t. 79. f. 1.

Ranunculus nemorosus thalictri folio. Baub. pin. 178.

Camer. hort. 137. Raii hist. 584. Mor. hist. 2. 437. f. 4. t. 28. f. 12.

R. præcox 2, thalictri folio. Clus. hist. 1. 233.

R. thalictri folio. Baub. hist. 3. 862.

R. thalictri fol. major. Park. parad. 217. 6.

R. præc. thal. fol. Ger. emac. 965. 6.

Aquilegia minor. Dalech. hist. 821.

Stipules ovate, petals obtuse.

3. Isopyrum aquilegioides. Columbine-leaved Isopyrum.

Lin. spec. 783. Reich. 2. 770. Hall. belv. n. 1190. Krock. fles. n. 891.

Aquilegia montana, flore parvo, thalictri folio. Baub.

pin. 144. prodr. 75. Baub. hist. 3. 484. Raii hist. 707. Mor. hist. 3. 458. f. 12. t. 1. f. 5.

A. viscosa. Lin. mant. 77. La Chenal obs. bot. p. 12.

Stipules obsolete.

DESCRIPTIONS, &c.

1. This is an annual plant, seldom more than three or four inches high. The leaves, which are shaped like those of Fumitory, are small, and of a gray colour. The stalk is naked to the top, where there is a circle of leaves just under the flowers. The flowers are small, of an herbaceous colour on the outside, but yellow within. [Capsules ten to fifteen, leguminose, compressed a little, setaceous-beaked, curved a little inwards, veined, pale, thin, opening inwards. Seeds fixed in a double row to the edge of the opening future, small, ovate-globular, covered with little raised dots, blackish, marked on one side with a linear hilum or scar^a.] Native of Siberia, whence the seeds were sent to the imperial garden at Petersburg, and Dr. Ammann sent a part of the seeds to Mr. Miller, [who cultivated them at Chelsea in 1759^b.] It flowers at the beginning of april (june, H. K.), and the seeds ripen in may.

2. [All parts of this plant are smooth, except the lower part of the stem and radical leaf, which is a little villose. Root perennial, creeping horizon-

^d Linn. suppl.

^a Gärtner.

^b Hort. kew.

tally. Root-leaf one, seldom two, tender, shorter than the stem, on a long upright petiole, twice trifid; leaflets blunt, widening towards the end, two-lobed or three-lobed, netted-veined, ash-coloured, resembling the leaves of *Thalictrum minus* or bulbous Fumitory. Stem commonly single, from six inches to near a foot in height; simple or very seldom branched; naked below, but having a leaf or two towards the top, like the root-leaf, only less compound: the upper leaves are ternate or lobed. All the leaves have a pale roundish stipule on each side. The stem terminates in a few spreading slender peduncles, each bearing one small flower; the petals of which are at first white, but turn red or purple, the natural number is five, but there are sometimes six. Stamens from thirty to thirty-six; filaments a little thickened at the top; anthers upright. Germs one, two or three, seldom four; becoming smooth, broad-oblong capsules, flattened a little, acuminate by the style from the inner future, but opening by the upper, in this state spreading very wide open, keeled and concave, displaying two or three seeds.—The leaflets of the nectary are inserted into the receptacle before the petals, but not always in a regular order; they are shorter than the stamens by half or two thirds, are upright, ovate, white, concave, from a pedicelled base widening into a cowl, but quite entire.

Native of the South of Europe.] Mr. Miller had it from the neighbourhood of Verona, and cultivated it in 1759. It flowers at the end of march, and the seeds ripen in may. [According to Jacquin it flowers in Austria in april or the beginning of may.]

3. This has leaves like the second, but a little larger, and of a greener colour. The stalks rise about six inches high, supporting two or three small white flowers, shaped like those of the preceding. It flowers in april, and the seeds ripen in june.

[According to Caspar Bauhin, and Haller, and Krockner from him, it differs from the preceding in having a very small root; the stem a long span in height, slender, having two or three, short, entire, stipular leaves on it, the rest like those of *Thalictrum minus*, only smaller; and a single blue flower, five times less than that of the preceding.]

Native of the mountains of Switzerland, Moravia, Trent, and the Apennines, in meadows, flowering in the spring.

It is the same with *Aquilegia viscosa* of Linneus.]

PROPAGATION AND CULTURE.

Sow the seeds in a shady border soon after they are ripe, or permit them to scatter; and when they come up keep them clean from weeds. These plants delight in a shady situation.

ISORA. See *Helicteres*.

[ITAIBA. See *Hymenæa*.]

ITEA. (*ITEA* of Theophrastus and Dioscorides: *παρα το νεαν*, from its quick growth, or early germination. Lex.)

Lin. gen. n. 275. Reich. n. 295. Schreb. n. 381.

Juss. 159. L'Herit. stirp. nov. 6. 137. Swartz

obs. 93. Cyrilla. Lin. gen. Reich. n. 294. Schreb.

n. 380. Juss. 160.—Diconangia, Mitch. gen. 5.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Rhododendra*, Juss.—Cyrilla inter *Ericas*,

Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-cleft, upright. Segments lanceolate, acute, permanent, coloured.

COR. Petals five, sessile, lanceolate, acuminate, spreading, deciduous.

STAM. Filaments five, awl-shaped, upright, the length of the corolla, inserted into the base of the calyx.

Anthers roundish, incumbent.

PIST. Germ ovate, superior. Style permanent, cylindrical, the length of the stamens. Stigmas two, blunt.

PER. Capsule ovate, longer than the calyx, mucronated by the style, two-celled, two-valved, many-seeded.

SEEDS very small, oblong, shining.

^c Jacquin.

Obs. *Itea Cyrilla* has the petals inserted, not into the calyx, but the receptacle; the style bifid, and the capsule not opening. Swartz.

ESSENTIAL CHARACTER.

Caps. two-celled, two-valved, many-seeded. Stigma emarginate.

SPECIES.

1. *Itea virginica*. *Virginian Itea*.

Lin. spec. 289. syst. 241. Reich. 1. 562. Gron.

virg. 143. 34. Duham. arb. 1. 319. t. 126.

Du Roi barbk. 1. 330. Trew. Ebrét. 55. t. 98.

Swartz obs. 94. L'Herit. stirp. nov. 138.

Diconangia. Mitch. gen. n. 5. Act. nat. cur. 8. app. 208.

Leaves ovate acute serrate.

[2. *Itea Cyrilla*. *Entire-leaved Itea*.

L'Herit. stirp. nov. 6. 137. t. 66. Swartz prodr. 50.

obs. 94. t. 4. f. 1. Ait. hort. kew. 1. 277.

Cyrilla racemiflora. Lin. syst. 241. Reich. 1. 561.

mant. 50. Jacqu. collect. 1. 162. ic. 1. t. 47.

Leaves lanceolate entire membranaceous.]

DESCRIPTIONS, &c.

1. This is a shrub six or seven feet high, sending out many branches from bottom to top. Leaves alternate, slightly serrate, reflex, veined, light green. At the extremity of the same year's shoots, in the month of july, are produced fine spikes of white flowers, three or four inches long, and erect. When this shrub is in vigour, it is entirely covered with these flowers, and then makes a fine appearance.

[Linneus remarks, that the *Itea* has the appearance of the *Padus*; that the leaves are petioled, and the flowers in terminating racemes. The stigma is headed in this species, whereas in the next it is bifid or double^a.

Native of North America. Cultivated in 1744, by Archibald Duke of Argyle^b.

2. This is also a shrub, three feet in height. Stem upright, somewhat branched, round, ash-coloured: branches alternate or scattered, spreading, angular, rufous, smooth. Leaves alternate, bluntish, revolute with the edges a little waved, one-nerved; the midrib marked with lines above, prominent underneath, smooth, paler underneath; dry, spreading, flat, permanent, three inches long, and an inch wide. Petioles very short, cylindric below, flat above, reddish. Racemes very many, lateral at the base of the new shoots, one from each bud, on short peduncles, spreading, from four to six inches long. Flowers scattered, pedicelled, spreading, white, two or three lines in diameter. Bracte linear, very sharp, white, withering, under the pedicels, than which it is scarcely longer. Bracteole two-leaved, opposite, linear, sharp, pressed close, on the pedicel itself next the calyx; which is white. Petals longer than the calyx. Anthers two-celled, peltate, very pale violet. Germ whitish: style short, compressed, scarcely bifid, shorter than the stamens: stigmas headed. Capsule sitting on the calyx, resembling two united styles by means of its double partitions.

The conformity of the flower and two-celled fruit persuade us to unite these two species under one genus^c.

Native of Carolina and Jamaica. It was observed in the former by Dr. Garden, in the latter by Swartz. Introduced here in 1765, by Mr. John Cree. It flowers in july and august^d.]

PROPAGATION AND CULTURE.

1. This shrub will live in the open air in England, but will not thrive upon dry gravelly ground. It is propagated by layers, which, if laid down in the autumn, will put out roots so as to be fit to remove by the following autumn, when they may be transplanted into a nursery, or to the place where they are to remain.

[2. This requires the protection of the greenhouse: and may be increased by layers or cuttings.

ITTI CANNI. See *Loranthus*.

ITTY ALU. See *Ficus*.]

^a L'Heritier.

^b Hort. kew.

^c L'Heritier.

^d Hort. kew.

IVA.

Lin. gen. n. 1059. Reich. n. 1155. Schreb. n. 1429.
Gärtn. t. 164. Juss. 190.
Tarchonanthus. Vaill. abt. par. 1719. f. 16, 17.
 Class. 21. 5. Monoecia Pentandria.
 Nat. order of *Compositæ Nucamentaceæ*.—*Corymbifera*,
 Juss.

GENERIC CHARACTER.

CAL. Common roundish: leaflets about five, subovate, blunt, almost equal, permanent, containing very many florets.
 COR. Compound convex; Corollets male very many in the disk; female five in the ray.
 Proper, Males one-petalled, funnel-form, five-toothed, the length of the calyx. Females none.
 STAM. Males, Filaments five, bristle-shaped, the length of the corollet. Anthers erect, approximating.
 PIST. Females, Germ oblong, the length of the calyx. Styles two, capillary, long. Stigmas acute.
 PER. none. Calyx unchanged.
 SEEDS solitary, naked, the length of the calyx, at top thicker, blunt.
 REC. chaffy; chaffs linear, interior.

ESSENTIAL CHARACTER.

MALE. Cal. common, three-leaved (or five-leaved, G.)
 Cor. of the disk one-petalled, five-cleft. Recept. with hairs or linear chaffs.
 FEM. in the ray, five (or fewer). Cor. none. Styles two long. Seeds naked, blunt.

SPECIES.

1. *Iva annua. Annual Iva.*
Lin. spec. 1402. Reich. 4. 141. hort. upf. 285.
amoen. 3. 25. Gärtn. fruct. 2. 394. Schmid.
ic. 59. t. 16.
Leaves lanceolate-ovate, stem herbaceous.
2. *Iva frutescens. Shrubby Iva, or Bastard Jesuit's-bark Tree.*
Lin. spec. 1402. Reich. 4. 141. amoen. 3. 25. Gron.
virg. 2. 147. Gärtn. fruct. 2. 394.
Parthenium fol. lanc. ferratis. Linn. hort. cliff. 443.
Gron. virg. 115.
Elichryso affinis peruviana frutescens. Pluk. phyt. t. 27.
f. 1. Herm. lugdb. 666.
Pseudo-Helichrysum frut. peruv. foliis longis ferratis.
Mor. hist. 3. 90.
Leaves lanceolate, stem shrubby.

DESCRIPTIONS, &c.

1. This is an annual plant, with an herbaceous stalk, rising from two to three feet high, sending out several branches from the sides. The leaves have three deep longitudinal veins and are ferrate. The stalks and branches are terminated by small clusters of pale blue flowers, which appear in July, and the seeds ripen in autumn.

[Calyx globular, five-leaved, seldom three-leaved or four-leaved. Chaffs of the receptacle linear, longer than the androgynous flowers. Female corollets crenulate, not distinctly and regularly cut into teeth. Seeds (to the females) obcordate, angular.

Native of South America, in many parts of the West Indies. Cultivated by Mr. Miller in 1768.]

2. This has slender woody branches, eight or ten feet high. Leaves ferrate. Branches terminated by small clusters of pale purple flowers. [Receptacle flatish, with linear, distant chaffs, almost equal to the calyx. Seeds (in the female corollets) obovate, acuminate downwards, slightly convex on one side, angular or three-sided on the other, pale straw-coloured, smooth, bald.

Native of Virginia and Peru. Cultivated in 1711 by the Dutchess of Beaufort. It flowers in August.]

PROPAGATION AND CULTURE.

1. Sow the seeds on a moderate hot-bed, and when the plants are fit to remove transplant them to another hot-bed, treating them as is directed for *IMPATIENS*.

2. This shrub was preserved in the green-house, but ordinary winters in England seldom hurt it, provided it is planted in a dry soil and a sheltered situation. If the branches be layed in the spring, they will put out roots in six months; or if cuttings be planted in a shady border in May, they will take root.

• Gärtn. from Schmidel.

f Ibid.

z Hort. kew.

[IVA. See *Teucrium*.

JUDAS TREE. See *Cercis*.

JUGLANDI AFFINIS. See *Hippomane*.]

JUGLANS, (of Pliny. Jovis glans; acorn or mast of Jove.)

Lin. gen. n. 1071. Reich. n. 1169. Schreb. n. 1446.

Gärtn. t. 89. Juss. 375.

Nux. Tournef. 346. Boerb. 2. 175. Malpig. 220, 221, 246.

Class. 21. 7. Monoecia Polyandria.

Nat. order of *Amentaceæ. Terebintaceæ*, Juss.

GENERIC CHARACTER.

* Male Flowers.

CAL. Ament cylindrical, imbricate-scattered all round, with one-flowered scales, turned outwards.

Perianth elliptic, flat, six-parted; segments upright-concave, blunt.

COR. none.

STAM. Filaments many (eighteen to twenty-four—twelve to twenty-four, G.) very short. Anthers oval.

* Female Flowers heaped.

CAL. Perianth one-leaved, bell-shaped, four-cleft, upright, very short, one-flowered.

COR. one-petalled, four-cleft, upright, acute, a little larger than the calyx: (none, G.)

PIST. Germ oval, large, inferior. Style very short: (styles two, G.) Stigmas two, large, reflex, jagged at top.

PER. Drupe dry, oval, large, one-celled.

SEED. Nut very large, roundish, netted-grooved, half-four-celled: (corticated, two-valved, G.) nucleus four-lobed, variously grooved.

ESSENTIAL CHARACTER.

MALE. Cal. one-leaved, scale-form. Cor. six-parted. Filam. eighteen.

FEM. Cal. four-cleft, superior. Cor. four-parted. Styles two. Drupe with a grooved nucleus.

SPECIES.

1. *Juglans regia. Common Walnut Tree.*
Lin. spec. 1415. syst. 858. Reich. 4. 164. hort.
cliff. 448. upf. 286. mat. med. 203. Woodv. med.
bot. 347. t. 127. Mill. illustr. ic. Pallos. ross. 1, 2.
p. 2. Evel. sylv. Hunt. 170. fig. Du Roi barbk.
1. 323. Hall. helv. n. 1624. Ludw. et. t. 188.
Blackw. t. 247. Knorr. del. 1. t. n. 7. Kniph.
cent. 1. n. 47. Lour. cochinch. 573. Villars
dauph. 3. 797. Duham. arb. 2. 50. n. 1. t. 13.
Nux juglans. Dod. pempt. 816. Bauh. hist. 1. 241.
Ger. 1252. emac. 1440. Raii hist. 1376.—f. regia
vulgaris. Bauh. pin. 417.—vulgaris. Park. theat.
1413.
- β. *Nux juglans fructu maximo. Bauh. pin. 417.*
Large Walnut.
N. J. Caballina. Park. theat. 1413.
- γ. *N. J. fructu tenero & fragili putamine. Bauh. pin.*
417. Park. theat. 1413. 3.
Thin-shelled Walnut.
- δ. *N. J. bifera. Bauh. pin. 417. Park. theat. 1414. 5.*
Double-bearing Walnut.
- ε. *N. J. fructu ferotino. Bauh. pin. 417. Park. theat.*
1414. 6.
Late-ripe Walnut.

Leaflets (about nine) oval (or oblong) smooth subserrate almost equal, the odd one petioled.

2. *Juglans alba. White Walnut-tree or Hickory.*
Lin. spec. 1415. Reich. 4. 165. Du Roi barbk. 1.
333. Kalm in abt. Stockh. 1769. p. 119. Gärtn.
fruct. 2. 50. Gron. virg. 2. 150. 1. 190. Evel.
syl. ed. Hunt. 171. 4. Wangenh. 23. t. 10. f. 22.
Nux juglans alba virginienfis. Park. theat. 1414. Catesb.
car. 1. t. 38. Raii hist. 1377. & 1915. dendr. 5.
β. J. glabra. Mill. dict. n. 5. Pluk. phyt. t. 309.
f. 2. Du Roi. 1. 335.

Leaflets seven lanceolate serrate, the odd one sessile.

3. *Juglans nigra. Black Walnut-tree.*
Lin. spec. 1415. Reich. 4. 165. hort. cliff. 449.
upf. 287. Gron. virg. 150. Kalm in abt. Stockh.
1767. p. 51. Du Roi barbk. 1. 329. Medic. in
obs. soc. acon. Lutr. 1774. p. 229. Jacqu. misc. 2.
p. 3. ic. 1. t. 191. Thunb. jap. 195. Evel. syl.
ed. Hunt. 170. 2. Wangenh. 20. t. 8. f. 20.

Nux Juglans virginiana nigra. Herm. lugdb. 452. t. 453.
Catesb. car. 1. t. 67. Duham. arb. 13. Raii hist.
1377. dendr. 5. n. 4. & 6. n. 2.

- Leaflets many (about fifteen) oblong-lanceolate serrate, fruits globular valveless, nuts wrinkled, male aments sessile simple, females peduncled.*
4. *Juglans oblonga.* Oblong-fruited Walnut-tree.
Retz. obs. 1. 31. n. 106.
Leaflets many (six or eight pairs) ovate-lanceolate serrate, pubescent with the petioles, nuts deeply sinuate-grooved.
5. *Juglans cinerea.* Ash-coloured Walnut-tree.
Lin. spec. 1415. Reich. 4. 165. Jacqu. misc. 2. p. 7. ic. 1. t. 192. Medic. in obs. Soc. acon. Lutr. 1774. p. 230. Wangenh. 21. t. 9. f. 21.
J. oblonga. Mill. dict. n. 3. Du Roi herb. 1. 332. Dubam. arb. 14. Reich. Evel. sylv. ed. Hunt. 1. 171. 3. Raii dendr. 6. n. 3.
Leaflets eleven lanceolate shorter on one side of the base.
6. *Juglans compressa.* Flat-fruited Walnut-tree.
Gærtn. fruct. 2. 51.
J. ovata. Mill. dict. n. 6. Evel. syl. ed Hunt. 172. 6.
J. alba, fructu ovato compresso, nucleo dulci, cortice squamoso. Clayt. in Gron. virg. 150.
Leaflets three pairs lanceolate serrate smooth nearly equal, fruit flattened.
7. *Juglans angustifolia.* Narrow-leaved Walnut-tree.
Ait. hort. kew. 3. 361.
Leaflets thirteen linear-lanceolate serrate sessile equal at the base, nuts elliptic.
8. *Juglans baccata.*
Lin. spec. 1416. Reich. 4. 166. Brown. jam. 346. Sloan. jam. 2. 1. t. 157. f. 1. Raii dendr. 6. n. 7.
Leaflets in threes.

DESCRIPTIONS, &c.

1. The Walnut is a very large and lofty tree, with strong spreading boughs. Leaves pinnate, with a very strong but not unpleasant smell. Leaflets three pairs (sometimes two or four), nearly equal, except that the odd one is larger, they are entire, smooth, and shining. Male flowers in close, pendulous, subterminating aments. Females scattered, frequently two or three together. Fruit an ovate, coriaceous, smooth drupe, inclosing an irregularly grooved nut, which contains a four-lobed, oily, eatable kernel, with an irregular knobbed surface, and covered with a yellow skin.]

There are several varieties of the Common Walnut, which have been specified above, but they all vary again when raised from the seed, and nuts from the same tree will produce different fruit: persons therefore who plant the Walnut for its fruit, should make choice of the trees in the nurseries, when they have their fruit upon them.

[The flowers begin to open about the middle of april, and are in full blow by the middle of may, before which time the leaves are fully displayed. Even in the South of France it is frequently injured by spring frosts; to avoid this, it is a practice in Switzerland to engraft the common stocks with the late-ripe variety, which does not produce its fruit before the month of may or june^a. This might perhaps be too late for us, but in warmer climates, where the fruit is of much consequence for the oil which it yields, where the Olive will not succeed, it may be worth attending to. In France, Switzerland, &c. the wood is in great request for furniture, as it was formerly in England, till the use of Mahogany superseded it.

Were this timber, says Mr. Evelyn, in greater plenty amongst us, we should have far better utensils of all sorts for our houses, as chairs, stools, bedsteads, tables, wainscot, cabinets, &c. instead of the more vulgar Beech, subject to the worm, weak and unsightly; but which, to counterfeit and deceive the unwary, they wash over with a decoction made of the green husks of Walnuts, &c.

What universal use, he continues, the French make of the timber of this tree for domestic affairs, may be seen in every room both of poor and rich. It is of singular use with the joiner for the best grained and coloured wainscot; with the gunsmith for stocks; with the coachmaker for wheels and the bodies of coaches; the cabinet-maker uses it for inlayings, especially the firm and close timber about the root, which is ad-

mirable for flecked and cambleted works. To render this wood the better coloured joiners put the boards into an oven after the batch is forth, or lay them in a warm stable; and when they work it, polish it over with its own oil very hot, which makes it look black and sleek, and the older it is, the more estimable; but then it should not be put in work till thoroughly seasoned, because it will shrink beyond expectation. It is only not good to confide in it much for beams or joists, because of its brittleness.

Besides the uses of the wood, the fruit, when tender and very young, is used for preserves. It makes also food and oil: this last is of extraordinary use with the painter in whites and other delicate colours, also for gold size and varnish; and with this they polish walking-staves, and other works which are wrought in with burning. They fry with it in some places, and eat it in Berry instead of butter, of which they have little or none good; and therefore they plant infinite numbers of these trees all over that country: the use of it to burn in lamps is common there.

The very husks and leaves being macerated in warm water, and that liquor poured on grass-walks and bowling-greens, infallibly kills the worms, without endangering the grass^b. Not that there is any thing peculiarly noxious in this decoction, but worms cannot bear the application of any thing bitter to their bodies, which is the reason that bitters, such as Gentian, are the best destroyers of worms lodged in the bowels of animals. Worms are seldom observed in the intestines of the human body, excepting in cases where the bile is either weak or deficient^c.

The dye made of this lixive will colour woods, hair and wool; and the green husks boiled, make a good colour to dye a dark yellow, without any mixture.

The younger timber is held to make the better-coloured work; but the older, being more firm and close, is finer cambleted for ornament. Those trees which are raised from the thick-shelled fruit become the best timber; but the thin-shelled yield better fruit.

Those nuts which come easily out of their husks should be laid to mellow in heaps, and the rest exposed in the sun till the shells dry, else the kernels will be apt to perish: some again preserve them in their own leaves, or in a chest made of walnut-tree wood; others in sand, especially for a seminary. Old nuts are not wholesome till macerated in warm water; but if you bury them in the earth in pots, out of the reach of the air, and so as no vermin can attack them, they will keep marvellously plump the whole year about, and may easily be blanched. In Spain, they strew the gratings of old and hard nuts, first peeled, into their tarts and other meats. For the oil, one bushel of nuts will yield fifteen pounds of peeled and clear kernels, and that half as much oil, which the sooner it is drawn, is the more in quantity, though the drier the nut, the better in quality: the lees or marc of the pressing is excellent to fatten hogs with. After the nuts are beaten down, the leaves should be swept into heaps, and carried away, because their extreme bitterness impairs the ground^d.

The unripe fruit, such as has been long used as a pickle, is directed for medicinal use by the London College, as an anthelmintic, and many authors speak of its effects in destroying worms. An extract is the most convenient preparation, as it may be kept for a sufficient length of time, and made agreeable to the stomach by mixing it with cinnamon water. In this state the Walnut is said also to be laxative, and of use in apthous affections and sore throats: for this purpose a rob may be prepared from the juice. The vinegar in which Walnuts have been pickled is a very useful gargle. The kernel is similar in qualities to the Almond; the oil does not congeal by cold, and answers the medicinal purposes of the oil of almonds^e.

We are not certain of the native place of growth of the Walnut tree. It is not an aboriginal of Eu-

^b Sylva 174, 175, 177, 178. ed Hunt.

^c Dr. Hunter's note, p. 178

^d Sylva, 178, 179.

^e Woodville.

^a Villars.

rope, and there is little doubt but that it came into Italy from Greece, and into Greece from some part of Asia. Some authors take it for the *Nux Persica* of Theophrastus; Pliny (l. 15. c. 24.) says, it was brought from Persia by the kings; and on the authority of Lerche it is now set down as a native of Persia in the later works of Linneus. According to Loureiro, it is found wild in the northern provinces of China.

It is much cultivated in some parts of Italy, France, Germany, and Switzerland. Burgundy, says Mr. Evelyn, abounds with Walnut-trees, where they stand in the midst of goodly wheat-lands, at sixty and a hundred feet distance, and so far are they from hurting the crop, that they are looked upon as great preservers by keeping the ground warm, nor do the roots hinder the plough. Whenever they fell a tree, which is only the old and decayed, they always plant a young one near him. In several places betwixt Hanau and Frankfort in Germany, no young farmer is permitted to marry a wife, till he bring proof that he has planted a stated number of Walnut-trees. The Bergstras, which extends from Heidelberg to Darmstadt, is all planted with Walnuts^f. According to Pallas, it is common in the Ukraine, the Chersonesus Taurica and Caucasus, where it also appears here and there in a wild state. From the northern side of Caucasus it becomes more scarce, but on the lower parts towards the south it is very common, large, and appears to be indigenous.

Formerly there were considerable plantations of this tree in England, particularly on the chalk hills of Surry. Mr. Evelyn instances those of Sir Richard Stidolph near Leatherhead; Sir Robert Clayton's at Morden near Godstone, once belonging to Sir John Evelyn; and about Carshalton, where many thousands of these trees celebrate the industry of the owners, and will certainly reward it with infinite improvement, besides the ornament which they afford to those pleasant tracts, for some miles in circumference^g.

Little use having been made of the wood of late years for furniture, the old trees that have been cut down have not been always replaced with young ones, and thus the plantations of this tree have gradually diminished. The wood is now principally used for making gun-stocks; and the fruit with us is only eaten ripe in deserts, or green in pickles: so that the call for this tree is not equal to what it was formerly.

The English name of this tree and fruit has nothing to do with *wall*: it is *Gaul-nut*, whence we may conclude it came to us anciently from Gaul. The French call the tree *Noyer*, and the fruit *Noix*; as the Romans named it exclusively *Nux*. In German it is *Wallnuss* or *Welsche Nuss*.]

2. The leaves of the White Walnut-tree, or Hickory Nut, as it is called in North America, where it is very common in most of the provinces, are composed of two or three pairs of oblong lobes, terminated by an odd one; these are of a light green, and serrate; the lower pair of lobes are the smallest, and the upper the largest. The fruit is shaped like the common Walnut, but the shell is not furrowed, and is of a light colour.

[Gærtner describes the outer shell or rind as thick, coriaceous, when ripe opening at top into four parts. The shell ovate-globular, four-cornered, terminated by a strong, quadrangular dagger-point, marked with obsolete lines not with wrinkles; smooth, whitish, two-valved, half-four-celled: valves bony, very thick, without any visible suture on the outside: partitions also bony, thick, rufescent; two lateral longitudinal, and one transverse at the base of the shell, but all incomplete, and forming a half-four-celled cavity. Seed or kernel large, half-four-lobed; the lobes variously and irregularly wrinkled and tubercled.

Catesby says, it is usually a tall tree, and often grows to a large bulk, the body being from two to three feet diameter. The leaves differ from those of the common Walnut, not only in being serrated, but in being narrower and sharper pointed. In October, when

the nuts are ripe, the outer shell opens and divides in quarters (as represented in the figure) disclosing the nut, the shell of which is thick, not easily broke but with a hammer. The kernel is sweet and well tasted; the Indians draw from it a wholesome and pleasant oil, and store up the nuts for winter provision. Hogs and many wild animals receive great benefit from them. The wood is coarse-grained, yet of much use for many things belonging to agriculture. Of the saplings or young trees are made the best hoops for tobacco, rice, and tar barrels. For the fire no wood in the northern parts of America is in so much request. The bark is deeply furrowed.

Cultivated in 1699 by the Dutchess of Beaufort^h.

3. Du Roi as well as Miller gives the *Juglans glabra* as a distinct species.]

Miller says, it is not so large as the Hickory, that the leaves are composed of two pairs of leaflets, besides the odd one, narrow at their base, broad and rounded at their ends, serrate and of a light green; and that the nuts are small, have a smooth shell, and are very hard and white.

[Catesby calls it *Nux Juglans carolinensis fructu minimo, putamine levi*, or Pignut, and gives a figure of the fruit. He says, the branches spread more than the common Hickory, are smaller, and the leaves not so broad; nor is the bark so wrinkled. The nuts are not above one-fourth part of the size, and both inner and outer shell being very thin, they are easily broken with the fingers. The kernels are sweet, but being small, and covered with a very bitter skin, they are chiefly eaten by squirrels and other wild animals.]

3. The Black Virginia Walnut grows to a large size. The leaves are composed of five or six pairs of leaflets, which end in acute points and are serrate; the lower pair is the least, the others gradually increase, but the pair at top and the terminating leaflet are smaller: these leaves when bruised emit a strong aromatic flavour, as does also the outer cover of the nuts, which is rough, and rounder than that of the Common Walnut. The shell is very hard and thick, and the kernel small but very sweet.

[Catesby on the contrary says, that it is very oily and rank-tasted; when laid by however for some months it is eaten by indians, squirrels, &c. He remarks, that the leaves are much narrower, as well as sharper-pointed than those of our Walnut, and not so smooth; that the thickness of the inner shell requires a hammer to break it; and that it seems to have taken its name from the colour of the wood, which approaches nearer to black than any other wood that affords so large timber, and therefore is esteemed for making cabinets, tables, &c.]

Mr. Miller says that this is the most valuable wood of all the sorts of Walnut, and that some of the trees are beautifully veined, and will take a good polish; that others however have very little beauty. He adds, that this is full as hardy as our common sort, and that there are some large trees of it in the Chelsea garden, which have produced great quantities of fruit upwards of forty yearsⁱ, which have generally ripened so well as to grow; but the kernels being small, they are of little value on that account. [It was cultivated in 1656, by Mr. John Tradescant, junior^k.]

Jacquin gives a long description of this tree and its fructification at the beginning of the second volume of his miscellanies.

Catesby says, that most parts of North America abound with this tree, particularly Virginia and Maryland, towards the heads of the rivers, where in low rich land it grows in great plenty, and to a vast size. According to Jacquin, it abounds in Pennsylvania and New Jersey, and is common not only in Virginia and Maryland, but in Carolina, at a distance from the sea, the neighbourhood of which it dislikes. To the north of New York it becomes scarce, and is not found wild beyond the latitude of 41° 30'. It is cultivated however more to the northward, between New York and Albany: and it will grow, though not bear fruit in Sweden. In Pennsylvania the flowers began to un-

^f Sylva, 174, 175.

^g Ibid, 176.

^h Hort. kew.

ⁱ He says this in 1759.

^k Hort. kew.

fold about the fifth or seventh of May, when those of the *Juglans regia* were already passed. The leaves come out there about the ninth of May. The nuts ripen there and in New Jersey at the end of September; about the middle of October they are all fallen from the trees. The leaves fall soon after the fruit.

The growth of this tree is remarkably quick; it spreads out roots horizontally to a considerable distance, and will not suffer any thing to grow under its shade. When planted in an orchard, it destroys all the Apple trees that are near it.

It seems to be hardier than our Walnut, in Pennsylvania and New Jersey, when the Peaches, Hicories, and Mulberries have been much injured by frost, the Black Walnut has sustained no damage. At eight or ten years of age it begins to bear plenty of fruit, and with age increases in fertility. Professor Jacquin observed trees in New Jersey that were forty-four years old, nine fathoms in height, and three ells and a half in diameter at the distance of an ell from the ground. It is much planted in America near houses for the shade.

4. Leaflets alternate, sessile, oblique, acute, naked above, pubescent underneath, void of smell. Petiole and upper nerve tomentose. Drupe oval, tomentose, viscid. Nut oblong, acuminate, the colour of the common Walnut.

It was raised from nuts brought from America by Kalm, and first bore fruit in 1774. It was supposed to be the *J. nigra*, but the colour and form of the fruit is different, and the leaves have no smell.

5. This grows to a large size. The leaves have seven or eight pairs of long heart-shaped leaflets, broad at their base, where they are divided into two round ears, but terminate in acute points; they are rougher and of a deeper green than those of the Black Walnut, and have nothing of the aromatic scent which they have. The fruit is very long; the shell deeply furrowed and very hard; the kernel small but well-flavoured.

[In habit, trunk, and bark this is the same with *Juglans nigra*. The male aments also are pendulous, but they are more often in pairs than solitary, and without flowers at their filiform tip: in structure they resemble those of *J. regia*, but are more oblong. The peduncles of the females are somewhat villose, round and terminating, bearing from three to five sessile flowers at the extremity. Germ oblong. Stigmas purple and long. Drupe oblong-ovate, villose, viscid. with very little smell. Nut acuminate, rough and unequal on the outside. Kernel less pleasant, and more oily than our Walnut. Leaflets about seven on each side, besides the end one, opposite, subsessile, villose when magnified, ferrulate, ovate-oblong, acuminate, having little smell, the bases nearly equal; midrib round and villose.

Jacquin suspects that Linneus's specific differences of this and the *nigra* are transposed. This and the *oblonga* of Retzius and Miller seem to be one species.

Native of North America. Cultivated in 1656, by Mr. John Tradescant, junior. The order of flowering, according to Jacquin is, first *J. regia*, then *cinerea* and lastly *nigra* in a few days after. The order of fruiting is different, for when the fruit of the common Walnut begins to drop on the eighth of September, the *nigra* follows at the end of the same month, and the *cinerea* not till after the beginning of October.]

6. This tree is of a middling stature. The leaves have three pairs of leaflets, of a dark green colour, ending in acute points. The fruit is oval; the shell white, hard and smooth; the kernel small, but very sweet. The young shoots are covered with a very smooth brownish bark, but the stems and older branches have a rough scaly bark, whence it has the appellation of *Shagbark* in America.

[Gærtner describes the shell as ovate-rounded, obliquely truncate at the base, flattened like a lens, but four-cornered and shaped like a rhomb, white, smooth, very thick and hard. Suture linear, scarcely percep-

tible; valves boat-shaped, with a compressed, acute keel; partitions as in the *alba*. Kernel small in proportion to the shell, half-four-lobed, with a rufescent-yellow skin.

Native of North America.

Gærtner has another sort, which he names *Juglans rubra* (Noix Pacanes de Madagascar); the shell of which is ovate-oblong, acuminate at both ends, especially at top, where it is produced into a long four-cornered dagger-point; it is smooth, with the suture scarcely discernible, of a middling thickness, hard, and of a pale testaceous colour: partitions coriaceous-crustaceous, brittle, brown. Kernel oblong, four-lobed, like the rest in structure; with the outer cuticle entirely of a blood-red colour.

He remarks, that the first species only has a distinct suture to the shell with a swelling rim.

Wangenheim has two others: 1. *J. ovalis*, or thin-shelled White Walnut, with five or seven leaflets, the outer ones broader, the fruit (f. 23.) oval, acuminate at both ends, with a brittle shell. 2. *J. cordiformis*, the Bitter Nut, with seven leaflets, lanceolate, serrate; the fruit (f. 25.) bitter, heart-shaped, with a brittle shell.—These are natives of North America.

7. Native of North America. Introduced in 1766, by Messrs. Kennedy and Lee.

Probably this may prove to be the same with some of the preceding species: perhaps n. 6.

8. Height twenty feet, as thick as the human thigh, with a comely top, and a gray bark having some furrows in it. Leaves terminating, always three together, three inches long, and one inch broad, thin, smooth, brownish green: common petiole reddish, two inches long; petiolules a quarter of an inch in length. Aments axillary, two together, an inch long. The fruit hangs from the branches on peduncles an inch in length; it is yellowish, oval, as big as a nutmeg, having under a very thin mucilaginous pulp, a large shell, which is hard and woody. The partitions and lobes of the seed, as well as the parts of the flower, agree with the characters of this genus.

Native of Jamaica.

PROPAGATION AND CULTURE.

The common Walnut is propagated in many parts of England for the fruit, and formerly the trees were propagated for their wood, which was in very great esteem, till the quantity of Mahogany, and other useful woods which have been of late years imported into England, almost banished the use of Walnut.

These trees are propagated by planting their nuts, which, as was before observed, seldom produce the same sort of fruit as are sown; so that the only way to have the desired sort, is to sow the nuts of the best kinds; and if this is done in a nursery, the trees should be transplanted out when they have had three or four years growth, to the place where they are designed to remain; for these trees do not bear transplanting when they are of a large size, therefore there may be a good number of the trees planted, which need not be put at more than six feet apart, which will be distance enough for them to grow till they produce fruit; when those whose fruit are of the desired kind may remain, and the others cut up, to allow them room to grow, by this method a sufficient number of the trees may be generally found among them to remain, which will thrive and flourish greatly when they have room; but as many people do not care to wait so long for the fruit, so the next best method is to make choice of some young trees in the nurseries, when they have their fruit upon them; but though these trees will grow and bear fruit, yet they will never be so large or so long lived, as those which are planted young.

All the sorts of Walnuts which are propagated for timber, should be sown in the places where they are to remain; for the roots of these trees always incline downward, which being stopped or broken, prevent their aspiring upward, so that they afterwards divaricate into branches, and become low spreading trees; but such as are propagated for fruit are greatly mended

¹ Jacq. misc.

^m Retzius.

ⁿ Jacquin.

^o Hort. kew.

^p Ibid.

^q Sloane.

^r Brown. jam.

by transplanting; for hereby they are rendered more fruitful, and their fruit are generally larger and fairer; it being a common observation, that downright roots greatly encourage the luxuriant growth of timber in all sorts of trees; but such trees as have their roots spreading near the surface of the ground, are always the most fruitful and best flavoured.

The nuts should be preserved in their outer covers in dry sand until february, when they should be planted in lines, at the distance you intend them to remain; but in the rows they may be placed pretty close, for fear the nuts should miscarry; and the young trees, where they are too thick, may be removed, after they have grown two or three years, leaving the remainder at the distance they are to stand.

In transplanting these trees, you should observe never to prune either their roots or large branches, both which are very injurious to them; nor should you be too busy in lopping or pruning the branches of these trees when grown to a large size, for it often causes them to decay; but when there is a necessity for cutting any of their branches off, it should be done early in september (for at that season the trees are not so subject to bleed) that the wound may heal over before the cold increases; the branches should always be cut off quite close to the trunk, otherwise the stump which is left will decay, and rot the body of the tree.

The best season for transplanting these trees is as soon as the leaves begin to decay, at which time if they are carefully taken up, and their branches preserved entire, there will be little danger of their succeeding although they are eight or ten years old, as I have several times experienced; though, as was before observed, these trees will not grow so large, or continue so long, as those which are removed young.

This tree delights in a firm, rich, loamy soil, or such as is inclinable to chalk or marl; and will thrive very well in stony ground, and on chalky hills, as may be seen by those large plantations near Leatherhead, Godstone, and Carshalton in Surry, where are great numbers of those trees planted upon the downs, which annually produce large quantities of fruit, to the great advantage of their owners; one of which I have been told, farms the fruit of his trees, to those who supply the markets, for 30l. per annum.

The distance these trees should be placed, ought not to be less than forty feet, especially if regard be had to their fruit; though when they are only designed for timber, if they stand much nearer, it promotes their upright growth. The black Virginia Walnut is much more inclinable to grow upright than the common sort, and the wood being generally of a more beautiful grain, renders it preferable to that, and better worth cultivating. I have seen some of this wood which has been beautifully veined with black and white, which, when polished, has appeared, at a distance, like veined marble. This wood is greatly esteemed by the cabinet-makers for inlaying, as also for bedsteads, stools, chairs, tables, and cabinets; and is one of the most durable woods for those purposes of English growth, being less liable to be infected with insects than most other kinds (which may proceed from its extraordinary bitterness;) but it is not proper for buildings of strength, it being of a brittle nature, and exceeding subject to break very short.

The general opinion is, that the beating off this fruit improves the trees, which I do not believe, since in the doing this, the younger branches are generally broken and destroyed; but as it would be exceeding troublesome to gather it by hand, so in beating it off, great care should be taken that it be not done with violence, for the reason before assigned. In order to preserve the fruit, it should remain upon the trees till it is thorough ripe, when it should be beaten down, and laid in heaps for two or three days; after which it should be spread abroad, when, in a little time, the husks will easily part from the shells; then you must dry them well in the sun, and lay them up in a dry place, where mice or other vermin cannot come to them, in which place they will remain good for four or five months; but there are some persons who put their Walnuts into an oven gently heated, where they

let them remain four or five hours to dry, and then put them up in oil jars, or any other close vessel, mixing them with dry sand, by which method they will keep good six months. The putting them in the oven is to dry the germ, and prevent their sprouting; but if the oven be too hot it will cause them to shrink.

All the other sorts are propagated in the same way, but as few of the sorts produce fruit in England, their nuts must be procured from North America; they should be gathered when fully ripe, and put up in dry sand, to preserve them in their passage to England: when they arrive here, the sooner they are planted the greater chance there will be of their succeeding; when the plants come up, keep them clean from weeds; and if they shoot late in the autumn, and their tops are full of sap, cover them with mats, or other light covering, to prevent the early frosts from pinching their tender shoots, which often causes them to die down a considerable length before the spring; but if they are screened from these early frosts, the shoots will become firmer and better able to resist the cold. Some of the sorts being tender whilst young, require a little care for the two first winters, but afterwards will be hardy enough to resist the greatest cold of this country. The black Virginia Walnut is full as hardy as the common sort. They all require the same culture as the common Walnut; but grow best in a soft loamy soil, not too dry; and where there is a depth of soil for their roots to run down. The Hickory, when young, is very tough and pliable, sticks of it therefore are much esteemed; but the wood, when large, being very brittle, is not of any great use. The Black Virginia Walnut is the most valuable.

[In setting the nuts, Dr. Hunter recommends drills to be made at one foot asunder, and two inches and a half deep, into which put the nuts four inches apart. Mr. Evelyn advises some furze to be chopped among them, to preserve them from vermin. The spring following the plants will come up; and in two years they will be of a proper size to plant out in the nursery. There, having shortened their tap-roots, plant them in rows two feet and a half asunder, and at the distance of a foot and a half in the rows. Here they may remain till they are of a proper size for their final planting. If they are to be planted in fields they should be out of the reach of cattle, before they come out of the nursery: but these should be removed with great caution; the knife should be very sparingly applied to the roots; and they should be planted as soon as possible after taking up, soon after the fall of the leaf.

In raising the Walnut for fruit, Mr. Boutcher recommends flat stones, tile-sherds or slates to be buried eight inches deep, under the nuts when they are set: the distance to be six inches, and the depth two inches. After two seasons remove them early in autumn, and plant them fourteen or sixteen inches asunder, on the same kind of bottom, or any hard rubbish, to prevent them from striking downwards, and to induce them to spread their roots on the surface. At the end of two or three years repeat this again, making the bedding at the depth of fifteen or sixteen inches, and planting them two feet asunder: here let them remain three or four years, when they will be fit to remove for the last time. The soil for fruit should be dry and sound, with a sandy, gravelly or chalky bottom. The trees managed in this way, will have higher-flavoured fruit that ripens earlier, and they will bear a plentiful crop twenty years sooner than in the usual method. The best manure for them is ashes, spread the beginning of winter, the land having been first ploughed or dug.

Since plants raised from the nuts of the same tree will bear fruit of very different quality, Mr. Boutcher advises the inarching one of the best sorts on the common Walnut-tree; by which method the planter is both secure of his sort, and he will have fruit in one-third of the time that he would obtain it from the nut. This however can be practicable only in few situations. The time in which I have experienced a Walnut-tree to bear from the nut is about twenty years.

If these trees be intended to form a wood, for which purpose they answer extremely well, Dr. Hunter advises to take them out of the nursery when they are three or four feet high, and to plant them three yards asunder; thinning them when their heads begin to interfere. Thus these large and branching trees will be drawn up with beautiful stems to a great height.

For raising timber, Mr. Boucher recommends to set the nuts in february, in drills five feet asunder, eighteen inches distant in the rows, and two or three inches deep; taking up every other plant after two years. They may stand thus four or five years longer, the ground between being cropped with Turneps, Carrots, Beans, Cabbages, or other kitchen-garden plants. From time to time the least promising may be cut off below ground, when they are near touching each other, till they are left at the distance of about thirty feet.

The size to which the Walnut will attain may be judged of from what Scamozzi the architect says, as Mr. Evelyn reports; that he saw a table of Walnut tree in Lorrain, all of one piece, which was twenty-five feet in breadth, of competent length and thickness.

JUJUBA. See *Rhamnus*.

JUNCAGO. See *Triglochin*.

JUNCARIA. See *Ortegia*.

JUNCELLO ACCEDENS. See *Schoenus*.

JUNCILLUS. See *Scirpus*.

JUNCO-AFFINIS. See *Juncus* and *Schoenus*.

JUNCOIDES. See *Juncus*.

JUNCOIDI AFFINIS. See *Scheuchzeria*.

JUNCUS, (a *jungendo*, from its utility in closing joints.)

Lin. gen. n. 437. Reich. n. 471. Schreb. n. 590.

Tournef. 127. Juss. 44. Gärtn. t. 15.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Tripetaloides*.—*Junci*, Juss.

GENERIC CHARACTER.

CAL. Glume two-valved. Perianth six-leaved: leaflets oblong, acuminate, permanent.

COR. none, unless the coloured perianth be regarded as such.

STAM. Filaments six, capillary, very short. Anthers oblong, erect, the length of the perianth.

PIST. Germ three-cornered, acuminate. Style short, filiform. Stigmas three, long, filiform, villose, bent in.

PER. Capsule covered, three-sided, three or one-celled, three-valved.

SEEDS some, roundish.

OBS. *Juncus*, Mich. has a three-celled capsule, with many seeds.

Juncoides, Mich. has a one-celled capsule, with three seeds.

Some of the species have only three stamens.

ESSENTIAL CHARACTER.

Cal. six-leaved. Cor. none. Caps. one-celled.

SPECIES.

* With naked culms.

1. *Juncus acutus*. Prickly large Sea Rush.

Lin. spec. 463. Reich. 2. 93. Hudf. angl. 148.

Wither. arr. ed. 3. 346. Scop. carn. n. 430.

Sauv. monsp. 9. Guett. stamp. 2. 412. Villars

dauph. 2. 229. Allion. pedem. n. 2071.

Juncus acutus, capitulis Sorghi. Baub. hist. 2. 520.

Mor. hist. 3. 232. f. 8. t. 10. f. 15. Scheuch. agr.

338. Raii hist. 1302. syn. 431. Baub. prodr. 21. 2.

theat. 173.

J. maritimus cap. Sorghi. Park. theat. 1193. 4.

Barrel. ic. 203. 2.

Culm round almost naked, panicle conglomerate with al-

most-equal branches; involucre two-leaved spinose, seeds

ovate.

2. *Juncus maritimus*. Sea Hard Rush.

J. acutus β. Lin. spec. 464. Hudf. angl. 148. Wither.

arr. 346. Guett. stamp. 2. 412.

J. acutus marit. anglicus. Raii hist. 1303. Mor.

f. 14. Park. 1193. 7. Scheuch. agr. 340.

Culm round-almost naked, panicle with unequal branches,

one twice as long as the rest, involucre spinose, seeds

lanceolate.

3. *Juncus conglomeratus*. Round-headed Rush.

Lin. spec. 464. Reich. 2. 94. fl. suec. n. 298. Hudf.

angl. 148. Wither. arr. ed. 3. 345. Lightf. scot.

183. Relb. cant. n. 269. Hall. belv. n. 1312.

Scop. carn. n. 427. Gmel. fib. 1. 70. Neck.

gallob. 171. Pollich. pal. n. 344. Leers herborn.

n. 361. t. 13. f. 1. Villars dauph. 2. 229. Krock.

files. n. 541. Fl. dan. t. 1094. Ger. prov. 238. 2.

Juncus. Camer. epit. 780. Matth. 1036.—*lævis*.

Baub. hist. 2. 520. 2.—*panicula non sparsa*. Baub.

pin. 12. theat. 183. Mor. hist. f. 8. t. 10. f. 7.—

panic. conglomerata. Scheuch. agr. 343.—*glomerato*

flore. Lob. ic. 84. Park. theat. 1191. 3.—*vulgaris*

panic. compactiore. Raii hist. 1304. syn. 432.

Culm naked stiff, head lateral.

4. *Juncus effusus*. Common Soft Rush.

Lin. spec. 464. Reich. 2. 94. fl. suec. n. 299. Retz.

obs. 1. 16. n. 35. Hudf. angl. 148. Wither.

arr. ed. 3. 345. Lightf. scot. 183. Relb. cant.

n. 270. Hall. belv. n. 1311. β. Scop. carn.

n. 428. Neck. gallob. 170. Pollich. pal. n. 345.

Leers herborn. n. 262. t. 13. f. 2. Fl. dan.

t. 1096. Villars dauph. 2. 230. Krock. files.

n. 343.

Juncus lævis. Dod. pempt. 605. 2. Tabern. 249.

Lob. 43. 2. Ger. emac. 35. 1.—*panic. sparsa, major*.

Baub. pin. 12. theat. 182. Scheuch. agr. 341. Mor.

hist. f. 8. t. 10. f. 4. Park. theat. 1191. 2.—*vul-*

garis, pan. sparsa. Raii hist. 1304. syn. 432.

Culm naked stiff smooth, panicle lateral scattered close,

root-scales opaque.

[5. *Juncus tenax*. Common Hard Rush.

Soland. M. S. Forst. austral. n. 514.

J. effusus β. Hudf. angl. 149.

J. glaucus. Sibth. oxon. n. 341.—*J. inflexus*. Wither.

arr. 345. Relb. cant. n. 271.

J. acutus. Ger. emac. 35. 4. Raii syn. 432.—*vulgaris*.

Park. theat. 1193.

Culm naked stiff striated, panicle lateral thin, root-scales

shining.

6. *Juncus inflexus*. Bending Soft Rush.

Lin. spec. 464. 4. Reich. 2. 95. Sauv. monsp. 9.

n. 122.

J. acumine reflexo, major. Baub. pin. 12. theat. 184.

Mor. hist. 3. 233. f. 8. t. 10. f. 25. Barrel. ic. 204.

Culm naked, membranaceous and curved in at top, panicle

lateral.

7. *Juncus filiformis*. Least Soft Rush.

Lin. spec. 465. Reich. 2. 95. fl. suec. n. 300. Smith

spicil. 2. t. 3. Hudf. angl. 149. Wither. arr.

ed. 3. 346. Hall. belv. n. 1313. Leers herborn.

n. 264. t. 13. f. 4. Allion. pedem. n. 2075.

J. lævis, panicula sparsa, minor. Scheuch. agr. 347.

t. 7. f. 11. Baub. pin. 12. theat. 183.

J. parvus, calamo supra paniculam compactam longius

producto. Raii hist. 1305. syn. 432. Pluk. phyt.

t. 40. f. 8.

Culm naked filiform nodding, panicle lateral.

8. *Juncus trifidus*. Three-flowered Rush.

Lin. spec. 465. syst. 340. Reich. 2. 96. fl. lapp. 119.

suec. n. 301. Hudf. angl. 149. Wither. arr. ed.

3. 345. Lightf. scot. 183. fig. Hall. belv. n. 1315.

Scop. carn. n. 432. Fl. dan. t. 107. Villars

dauph. 2. 231. Krock. files. n. 546.

J. acumine reflexo, (minor &) trifidus. Baub. pin. 12.

prodr. 22. 2. theat. 185. Park. theat. 1195. 3.

Juncoides alpinum trifidum. Scheuch. agr. 325.

Juncus trifidus. Baub. hist. 2. 521. 1. Raii hist.

1305.

Culm naked, leaves and three flowers terminating.

9. *Juncus squarrosus*. Moss Rush or Goose Corn.

Lin. spec. 465. syst. 340. Reich. 2. 96. fl. suec.

n. 302. lapp. n. 121. Hudf. angl. 149. Wither.

arr. ed. 3. 346. Lightf. scot. 184. Relb. cant.

n. 272. Sibth. oxon. n. 342. Hall. belv. n. 1317.

Neck. gallob. 171. Pollich. pal. n. 346. Fl. dan.

t. 430. Villars dauph. 2. 232. Krock. files.

n. 545. t. 47.

J. montanus palustris. Raii hist. 1303. syn. 432.

Gramen juncum, foliis & spica junci. Baub. pin. 5.

prodr. 12. 1. theat. 76. 2. Mor. hist. 3. 228. f. 8.

t. 9. f. 13.

Gr. junc. femine acuminato. Loesel. pruss. 15. t. 29.

Gr. junc. maritimum. Lob. ic. 18. Ger. 12. 1. emac.

22. 9.—*majus*. Park. theat. 1270. 6.

J. Matthioli.

- J. Matthioli. *Baub. hist.* 2. 521. 2.
Culm naked, leaves bristle-shaped, heads glomerate leafless.
10. *Juncus punctorius*.
Lin. syst. 340. *suppl.* 208.
Culm naked round, leaf round jointed mucronate, panicle glomerate.
** With leafy culms.
11. *Juncus nodosus*.
Lin. spec. 466. *Reich.* 2. 96. *Gron. virg.* 15. 2. 53.
Pluk. phyt. t. 92. f. 9.
Gramen junceum virginianum, calyculis paleaceis, bicornis. *Mor. hist.* 3. 228. f. 8. t. 9. f. 15.
Leaves knotted-jointed, petals mucronate.
12. *Juncus compressus*. Lesser jointed *Rusb.*
Relb. cant. n. 273. *Sibth. oxon. n.* 343.
J. articulatus α . *Lin. spec.* 465.—aquaticus. *syst.* 340.
Reich. 2. 97. f. succ. n. 303. *lapp. n.* 120. *Huds. angl.* 149. α . *Wither. arr.* 347. var. 1. *Engl. bot. t.* 238. *Hall. helv. n.* 1322. *Scop. carn. n.* 431. *Pollich pal. n.* 347. *Leers herborn. n.* 265. t. 13. f. 6. *Fl. dan. t.* 1097. *D'Affo arag. n.* 318. *Gmel. fib. i.* 69. *Villars. dauph. 2.* 233. *Krock. files. n.* 547.
J. aquaticus. *Allion. pedem. n.* 2089.
J. isthmicus. *Neck. gallob.* 168.
Gramen junceum, folio articulato, aquaticum. *Baub. pin. 5. prodr.* 12. 1. *theat.* 76. 2. *Scheuch. agr.* 331. *Raii hist.* 1307.—aquaticum. *Park. theat.* 1270. 5.
Gr. aquaticum. *Ger. 12. i. emac.* 22. 9.
J. fol. articulosis, flor. umbellatis. *Tournef. inst.* 247. *Raii syn.* 433.
Gr. junc. artic. palustre humilior, utriculis frequenter donatum. *Mor. hist.* 3. 227. f. 8. t. 9. f. 2.
J. foliaceus capsulis triangulis. *Baub. hist.* 2. 521. 2.
Culm leafy decumbent, leaves compressed knotted-jointed, panicle compound.
13. *Juncus nemorosus*. Greater jointed *Rusb.*
Sibth. oxon. n. 344.
J. articulatus. *Relb. cant. n.* 274. *Lightf. scot.* 184. β . *Lin. spec.* 465. *Pollich pal. n.* 347.—sylvaticus. *Lin. syst.* 340. *Reich.* 2. 97. *Huds. angl.* 150. *Wither. arr. var. 2.* *Hall. helv. n.* 1323.
J. sylvaticus. *Allion. pedem. n.* 2088. *Villars dauph. 2.* 232. *Krock. files. n.* 547. β .
J. nemorosus folio articulofo. *Tourn. inst.* 247. *Raii syn.* 433.
Gr. junc. fol. artic. cum utriculis. *Baub. prodr.* 12. *theat.* 77. *Scheuch. agr.* 333. *Raii hist.* 1307. 4. *Mor. hist. f. 8. t. 9. f. 1.*
Culm leafy erect, leaves roundish knotted-jointed, panicle superdecompound.
14. *Juncus uliginosus*. Least jointed *Rusb.*
Roth. fl. germ. 405. *Sibth. oxon. n.* 345. *Hall. helv. n.* 1320.
J. viviparus. *Relb. cant. n.* 275.
J. articulatus γ . *Huds. angl.* 150. *Wither. arr. var. 3.*
Gr. junc. capsulis triangulis minimum. *Raii hist.* 1307. *syn.* 434. *Mor. hist. f. 8. t. 9. f. 3.*
 β . viviparus. *Mor. hist. t. 9. f. 4.*
Culm leafy, flowers in bundles, bundles proliferous, leaves bristle-shaped, jointed-knotted.
15. *Juncus alpinus*. Alpine jointed *Rusb.*
Villars dauph. 2. 233. *Hall. helv. n.* 1321.
J. articulatus γ . *Lin. spec.* 465. *Reich.* 2. 97.
J. alp. fol. articulofo. *Scheuch. agr.* 333.
Gr. junc. fol. artic. sylvaticum. *Baub. pin. 5. n. 8.*
Culm leafy, leaves sessile, jointed-knotted, panicle simple, glumes awned.
16. *Juncus bulbosus*. Bulbous *Rusb.*
Lin. spec. 466. *syst.* 341. *Reich.* 2. 97. f. succ. n. 304. *Huds. angl.* 150. *Wither. arr.* 348. *Lightf. scot.* 185. *Relb. cant. n.* 276. *Hall. helv. n.* 1318. *Fl. dan. t.* 431. *Pollich. pal. n.* 348. *Leers herborn. n.* 266. t. 13. f. 7. *Villars dauph. 2.* 233. *Krock. files. n.* 550.
J. compressus. *Jacqu. vind.* 235.
J. repens apocarpus minor. *Barrel. ic.* 114.—& *Sorghi capitulis & Milii capitulis.* 747. 1, 2.
J. parvus cum pericarpis rotundis. *Baub. hist.* 2. 522. 3. *Raii syn.* 433.

- Gr. junc. junci sparsa panicula. *Mor. hist.* 3. 227. f. 8. t. 9. f. 11.
Leaves linear, channelled, capsules blunt.
17. *Juncus bufonius*. Toad *Rusb.*
Lin. spec. 466. *Reich.* 2. 98. f. succ. n. 305. *lapp. n.* 122. *Gartn. fruct.* 1. 53. *Huds. angl.* 150. *Wither. arr. ed. 3.* 348. *Lightf. scot.* 185. *Relb. cant. n.* 277. *Hall. helv. n.* 1319. *Scop. carn. n.* 433. *Pollich. pal. n.* 349. *Neck. gallob.* 168. *Leers herborn. n.* 267. t. 13. f. 8. *Fl. dan. t.* 1098. *D'Affo arag. n.* 319. *Villars dauph. 2.* 234. *Krock. files. n.* 551. *Gmel. fib. i.* 67. n. 30. *Weig. obs.* 29.
J. palustris humilior erectior. *Tourn. inst.* 246. *Raii syn.* 434.
Gr. junc. bufonium. *Tabern.* 225.
Gr. buf. erectum latifolium & angustifolium majus & minus. *Barrel. ic.* 263, 264.
Gr. nemorosum, calyculis paleaceis. *Baub. pin. 7. theat.* 100. *Mor. hist. f. 8. t. 9. f. 14.*—erectum. *Scheuch. agr.* 327.
Gr. junceum. *Ger. 4. 4. emac. 4. 4.*—parvum f. holosteum Matthioli, & Gramen bufonium Flandrorum. *Park. theat.* 1190. 8. & 1270. 11. *Raii hist.* 1309.
 β . Gr. nemorosum, calyculis paleaceis, repens. *Scheuch. agr.* 329. *Baub. pin.* 99.
 γ . Gr. nem. calyc. pal. species altera procerior. *Scheuch. agr.* 328. *Leers var. 3.*
 δ . Gr. bufon. erect. &c. *Barr. ic. ut supra.*
 ϵ . Gr. holosteum alpinum minimum. *Baub. pin. 7. prodr.* 14. *theat.* 101. *hist.* 2. 510.
Gr. juncoides min. anglo-britannicum. *Raii syn.* 434. *Huds. angl.* 151. β .
Culm dichotomous, leaves angular, flowers solitary, sessile.
18. *Juncus stygius*.
Lin. spec. 467. *Reich.* 2. 99. *Smith ic. ined.* 3. 55.
Leaves bristle-shaped, somewhat depressed, peduncles in pairs, terminating, glumes solitary, subbisfluous.
19. *Juncus Jacquini*.
Lin. syst. 341. *Reich.* 2. 99. *Allion. pedem. n.* 2081.
J. biglumis. *Lin. mant.* 63. *Jacqu. vind.* 237. t. 4. f. 2. *austr.* 3. t. 221. *Hall. helv. n.* 1316.
J. effusus α . *Lin. spec. & syst.* *Reich. 3. Lin. succ. cum synon.*
J. alpinus capitulo glomerato & nigro splendente. *Scheuch. it.* 1. 40. t. 5. f. 2.
Juncoides alpinum, floiculis junci glomeratis atrofus-cis. *Scheuch. agr.* 323. t. 7. f. 9.
Leaf awl-shaped, head terminating, four-flowered or thereabouts.
20. *Juncus biglumis*.
Lin. spec. 467. *Reich.* 2. 99. *amoen.* 2. 266. t. 3. f. 3. f. succ. n. 307. *Fl. dan. t.* 120.
Leaf awl-shaped, glume two-flowered, terminating.
21. *Juncus triglumis*.
Lin. spec. 467. *Reich.* 2. 100. f. succ. n. 306. *lapp. n.* 115. t. 10. f. 5. *Hall. helv. n.* 1314. *Fl. dan. t.* 132. *Gmel. fib. i.* 67. n. 29. *Allion. pedem. n.* 2080.
J. exiguus montanus mucrone carens. *Baub. pin.* 12. *prodr.* 22. *theat.* 183. *Rudb. elys.* 1. 103. f. 8.
Leaves flat, glume three-flowered, terminating.
22. *Juncus pilosus*. Small hairy *Wood Rusb.*
Lin. spec. 468. *Reich.* 2. 100. f. succ. n. 308. *Gartn. fruct.* 1. 54. *Huds. angl.* 151. *Wither. arr.* 349. *Curt. lond.* 5. 25. 345. *Hall. helv. n.* 1325. *Pollich. pal. n.* 351. *Neck. gallob.* 169. *Leers herborn. n.* 268. t. 13. f. 10.
Gramen nemorosum hirsutum. *Lob. ic.* 16. *Ger. 17. i. emac.* 19. 1.—majus. *Park. theat.* 1184. 1.—latifolium minus. *Baub. pin. 7.*—vulgare. *Raii syn.* 416.
Leaves flat, hairy, corymb somewhat branched, flowers solitary.
23. *Juncus spadiceus*.
Allion. pedem. n. 2083. *Villars dauph. 2.* 236. *Hall. helv. n.* 1326. *Scheuch. agr.* 312. t. 6.

- J. pilosus* γ. *Lin. spec.*
Leaves flat, hairy from the sheath, flowers very small, corymbed, solitary, shortly awned.
24. *Juncus sylvaticus*. Great hairy Wood Rush.
Huds. angl. 151. *Curt. lond.* 5. 26. 344. *Hall. belv. n.* 1324. *Fl. dan. t.* 441.
J. maximus. *Wither. arr. ed.* 3. 349.
J. pilosus δ. *Lin. spec.*
Gramen nemorosum hirsutum latifolium majus. *Scheuch. agr.* 317. *Baub. prodr.* 15. 1. *theat.* 102.—maximum. *Raii syn.* 416.
G. luzulæ maximum. *Baub. hist.* 2. 403. 2.
β. *J. nemorosus*. *Pollich pal. n.* 352. *Hall. belv. n.* 1327. *J. pilosus* ε. *Lin. spec.*
Leaves flat, hairy, corymb decomposed, flowers in bundles, sessile.
25. *Juncus niveus*. White-flowered Rush.
Lin. spec. 468. *Reich.* 2. 101. *Hall. belv. n.* 1328. *Scop. carn. n.* 436. *Leers herb. n.* 269. *t.* 13. *f.* 6?
Juncoides montanum nemorosum, flore niveo. *Scheuch. agr.* 320. *t.* 7. *f.* 7.
Gramini luzulæ affine, flore albo. *Baub. hist.* 2. 492.
Gr. hirsutum angustifolium minus, paniculis albis. *Baub. pin.* 7. *theat.* 106. *Mor. hist. f.* 8. *t.* 9. *f.* 39.
Leaves flat, somewhat hairy, corymbs shorter than the leaf, flowers in bundles.
26. *Juncus campestris*. Hairy field Rush.
Lin. spec. 468. *Reich.* 2. 101. *fl. suec. n.* 309. *Huds. angl.* 152. *Wither. arr. ed.* 3. 350. *Curt. lond.* 2. 19. 140. *Relb. cant. n.* 279. *Hall. belv. n.* 1330. *Scop. carn. n.* 434. *Pollich. pal. n.* 353. *Gmel. fib.* 1. 64. *Leers. herb. n.* 270. *t.* 13. *f.* 5. *Neck. gallob.* 170. *Gron. virg.* 38. *Villars dauph.* 2. 237.
J. villosus capitulis psyllii. *Tournef. inst.* 246. *Lin. lapp. n.* 126.
Juncoides villosum capit. psyllii. *Scheuch. agr.* 310.
Gr. hirs. capit. psyllii. *Baub. pin.* 7. *prodr.* 15. 2. *theat.* 103. *Mor. hist. f.* 8. *t.* 9. *f.* 4.
Gr. exile hirs. cyperoides. *Lob. ic.* 15. *Ger.* 16. 2. *emac.* 17. 2.
Gr. nemorosum hirs. minus angustifolium. *Park. theat.* 1185. 6.
Gr. nemor. hirs. vulgare. *Raii syn.* 416.
β. *Lin. lapp. n.* 127. *t.* 10. *f.* 2.
γ. *Juncoides hirs. capitulo glomerato*. *Sch. agr.* 312. *Mor.* 8. 9. 1. *Baub. theat.* 104.
δ. *Mich. gen.* 42.
ε. *J. latifolium alpinum glabrum, panic. sublutea splendens*. *Sch. agr.* 314. *Hall. belv. n.* 1329.
ζ. *Gr. hirs. elatius, panic. juncea compacta*. *Raii syn.* 416. *Huds. angl.* β. *Wither. arr. var.* 2. *Ger.* 16. 1. *Park.* 1186. *Baub. theat.* 104. *Baub. hist.* 2. 468. 2. *Mor.* 8. 9. *row.* 1. *f.* 1. *left.*
η. *Mich. gen.* 42.
Leaves flat, somewhat hairy, spikes sessile and peduncled.
27. *Juncus spicatus*. Spiked Rush.
Lin. spec. 469. *Reich.* 2. 102. *fl. suec. n.* 310. *lapp. n.* 125. *t.* 10. *f.* 4. *Lightf. scot.* 187. *Wither. arr. ed.* 3. 350. *Dicks. hort. succ.* 33. *Fl. dan. t.* 270.
J. alpinus latifolius, panicula racemosa nigricante pendula. *Till. pis.* 91. *Mich. gen.* 42. *n.* 7.
Leaves flat, spike racemed, nodding.
28. *Juncus ferratus*.
Lin. syst. 341. *suppl.* 208.
Leaves ensiform, flat, serrate, hoary underneath, sheaths of the panicle awl-shaped, perfoliate.
29. *Juncus grandiflorus*.
Lin. syst. 341. *suppl.* 209.
Leaf round, culm one-flowered, flower upright, single, naked.

DESCRIPTIONS, &c.

The Rushes have a simple grassy stem, without leaves or knots, or else knotty, with a sheathing leaf at each knot. Flowers terminating or lateral, corymbed or panicled, with the branchlets spathaceous at the base ^a.

^a Jussieu.

These plants agree with the Grasses in the glumes of their flowers, and the sheaths of their leaves; they differ in having the stems filled with pith, whereas in Grasses the stem it is well known is hollow. The Rushes form an intermediate link between the Grasses, and some of the Liliaceous plants, as *Anthericum*, &c. They form naturally two divisions, one without leaves, allied to *Scirpus*, &c., and the other with leafy stems. Some authors have made two genera of these. But all classical botanical writers, says Dr. Smith, have judiciously preserved this very natural genus entire, notwithstanding the capsule is in some species one-celled, in others three-celled: and who can help wishing that botanists had not divided many natural genera on more trivial grounds.

Probably varieties have been exalted into species. Mons. Reynier is of opinion that *Juncus effusus*, inflexus, conglomeratus and filiformis are all one species; and that *J. compressus*, nemorosus, uliginosus, and alpinus are another ^b.

1. Root perennial. Leaves round and hard. Culm round, hard and smooth, finishing in a winged feathered membrane, and bearing at top several round lateral spikes, some sessile, and others peduncled; the stem continues above these, and ends in a hard pungent point ^c. The panicle is crowded, close, from two to three inches long. Involucre, the sheath of the outer leaf, from an inch and half to two inches in length, terminating in a stiff pungent leaf, an inch or an inch and half long: that of the inner leaf about one inch long, terminating in a sharp point about half an inch long ^d.

Native of France, Italy, Carniola, Wales on the coast of Merionethshire.

2. Panicle not spreading, from three to six inches long, consisting of two principal branches, one of which is from three to upwards of six inches long, the other very short, immediately dividing into lesser branches. Involucre the sheath of the outer leaf about one inch long, terminating in a very sharp-pointed pungent leaf, from three to upwards of six inches long; that of the inner about half an inch long ^e.

Mr. Woodward, who is doubtful whether it be not a variety of *J. inflexus*, says that it grows in tufts near six feet high, and that the leaves are extremely rigid and sharp. It is found on the west coast of Wales; in the salt marshes about Maldon, Essex; on the coast of Norfolk and Lancashire.]

These Sea Rushes are planted on the sea banks in Holland. The roots running deep into the sand, and matting very much, so as to hold it together. In the summer, when they are fully grown, they cut them, tie them up in bundles, dry them, and work them into baskets, &c. On the Maese, &c. they grow upwards of four feet high.

3. [Root perennial, horizontal, close, covered with ovate scales; fibres filiform, very long. Culms from one to two feet in height, upright, round, smooth: sheaths at the base striated, blunt, leafless, awned, the uppermost three times as long as the rest. Root-leaves few, very like the culms. Head of flowers roundish, solitary, seldom two together, from the fissure of the culm, bursting out below the top. Peduncles short, numerous, crowded, subdivided, with a little sheath at the base, and a lanceolate-acuminate scalelet by way of bracte. The two calycine scales small. Stamens constantly three, never six. Seeds obconical, sharpish, white ^f: according to Withering, kidney-shaped. Native of Europe, on moist meadows and heaths.

4. Root, culms, root-leaves and peduncles as in the preceding, only larger. Culm three feet high, thicker, softer to the touch, easily broken, filled with a close pith. Panicle lateral, more or less scattered. Peduncles clustered, unequal, branched; with oblong, awned bractes. Flowers brownish. Leaflets of the (perianth or) corolla equal. Capsule obovate, sub-trigonal, very blunt, the length of the perianth. Seeds fulvous ^g.

^b Memoires, vol. 1.^c Ibid.^d Villars.^e Leers.^f Scheuchzer.^g Ibid.

The loose panicle at once distinguishes this from the preceding^h. The flowers have only three stamensⁱ.

Native of Europe, in wet meadows, marshes, &c. They flower in July and August.

These are used sometimes for making little baskets. The pith of both makes wicks for watch-lights, and toys.]

These with the hard rush grow common on moist, strong, uncultivated lands in most parts of England, and consume the herbage where they are suffered to remain. The best method of destroying them is, to fork them up clean by the roots in July, and after having let them lie a fortnight or three weeks, to put them in heaps, and burn them gently: the ashes will be good manure for the land. But to prevent their growing again, and to make the pasture good, the land should be drained; and then, if the roots be annually drawn up, and the ground kept duly rolled, the Rushes may be subdued.

[5. Root perennial. Culms glaucous green, with the sheaths at the base of a dark red chestnut colour, spear-shaped, but blunt at the end. Panicle bay-coloured, more upright and diffuse than in the preceding^k. Stamens six.

The hard Rush is common in pastures and by roadsides, in a moist soil; in England, Madeira, New Zealand, &c.

6. Roots tufted, slightly compressed, with a black bark, and abundance of fibres. Culms three quarters of a yard in height, with a dark-red shining sheath at the base, and curved at top; below the curvature, for almost a foot in length, it puts forth on one side, from a cleft in the culm, many peduncles, sustaining abundance of flowers^l.

Sauvages observes, that the top of the culm is flattened and arched over so as to cover the panicle.

This has been taken, by many authors, for our common Hard Rush.

Native of the South of Europe, in a strong soil, subject to wet, but where the water is clear.

7. Root perennial, horizontal, creeping; covered with smooth, brown, striated, imbricated scales; fibres filiform, but little branched, downy. Culms about a foot high, nearly erect, weak, striated, smooth; at the base clothed with oblong, sheath-like, striated, brown, obtuse scales, some of which frequently end in a little point, flowering about the middle; at the top more or less incurved, and sharp-pointed. Leaves scarcely any, except the barren stems be so called. Panicle lateral, about the middle of the stem, somewhat corymbose, of about five to eight flowers, of a pale whitish green. Sheath bristle-shaped, scarcely longer than the panicle. Bractes two under each flower, ovate, concave, membranaceous. Peduncles mostly simple, bearing one flower, rarely more, triangular, furnished with a few sheath-like scales at their base. Calycine leaflets ovate-lanceolate, acute, with a membranous edge, green on the back, striated, permanent, and at length becoming tawny. Stamens shorter than the calyx. Germ small, roundish: stigmas downy, permanent. Capsule roundish, red-brown, polished, three-valved, three-celled: the partitions opposite to the valves. Seeds small, numerous^m.

Native of Lapland, Switzerland, Germany, Italy, Britain, on turf bogs. Dr. Smith found it on the ascent of Mont Cenis from Italy; and on the Col de Balm, near Chamouny in Savoy. Mr. Newton, in Westmoreland near Ambleside. Mr. Jackson, at Windermoor in Cartmel. Mr. Dickson near Derentwater in Cumberland; and on Ben Lawers in Scotland.

8. Root perennial, woody, striking deep, creeping, with blackish fibres, putting forth close tufts of stems and leaves. Culms a span or more in length, round, stiffish, bristle-shaped, upright, with lanceolate, brownish sheaths at the base, accompanied by one, two or three bristle-shaped leaves, involving the culm in their sheaths. The culm is cloven at top into two stipular leaflets, almost of the same length, and there

is a third, much shorter, stretching out laterally. At the divisions are one or two very small scales, villose within, but smooth without. On the middle leaflet sit two flowers on very short peduncles, and a third adheres to the cleft, embraced by the second and third leaflet. The outer leaflets of the flower are larger, shining, of a rufous bay colour; the inner are paler and smaller. Stigma trifid. Capsule subtriquetrous, acuminate, brownⁿ. Dr. Withering says that the flowers are from one to four: and Lightfoot, that it varies with one, two and three axillary, and almost sessile flowers; but that the specimens he found had all single flowers.

Native of Lapland, Denmark, Switzerland, France, Silesia, Scotland, on the summits of the Highland mountains.

9. Root perennial. Stem upright, stiff, from eight to eighteen inches high. Root-leaves numerous, unequal in length, the longest near half the length of the culm, rigid and spreading. Panicle spiked, with unequal peduncles. Glumes at the base of the calyx, and the edges of the leaflets white. Capsule dark red or bay-coloured, shining^o.

Native of most parts of Europe, on moorish heathy ground, and turf-bogs: flowering in June and July. It indicates a barren soil, and the leaves lying close to the ground elude the stroke of the scythe. Horses are said to eat it^p.

10. Culm two feet high and more, round, smooth. Root-leaves none; but only two membranes, the rudiments of leaves. A single stem-leaf, like the culm, but a little longer, stiff, mucronate, pungent. Panicle terminating, closely conglomerate, of a few glomes arising from the glume. It is allied to *J. articulatus*, but all the parts are stouter, not to mention other circumstances. Native of the Cape of Good Hope^q.

11. This resembles *J. articulatus* very much, but the flowers are more collected in heads; the heads thinner, larger, and the branches of the panicle simple, not superdecompound: but it is chiefly distinguished by the petals being protracted into an awl-shaped point. Native of North America^r.

Retzius doubts whether Plukenet's figure belongs to this species^s.

12. Root perennial, horizontal, woody, round, fibrose. Root-leaves more than a foot in length, cylindrical, compressed, smooth, fistular, divided internally, knotted-jointed when dry. Culm from two to three feet high, upright, round, smooth, leafy, with four or five joints concealed by the sheaths. Culm-leaves bifarious, alternate, spreading, straight, very like the root-leaves. Sheaths long, slightly compressed, smooth, cloathing the culm above the middle; the lowest leaflets, blunt, awned. Panicle terminating. Peduncles few, alternate, upright, unequal, dichotomous-branched; the lower one having an awl-shaped, upright, floral leaf, almost the length of the panicle; the rest bracted with lanceolate-acuminate scales. Flowers in a sort of head, heaped, small, axillary and terminating. Calycine leaflets ovate-acuminate, membranaceous. Petals awl-shaped, acute, brownish, and then turning purplish. Capsule three-cornered, acuminate, purplish, longer than the petals^t.

Native of meadows and marshes.

13. This differs, according to Leers, from the foregoing in having the leaves cylindrical, higher than the culms; the panicle more branched, and superdecompound; the heads many-flowered and larger; the flowers purple and shining; the petals extremely acute, the three inner ones a little shorter than the others. Native of moist woods.

In English Botany it is remarked, that there seems to be no reason for making the upland variety of this plant a distinct species; that it is certain at least, that neither the leaves being more or less compressed, nor the panicle more or less compound, are permanent marks of distinction.

The marks given in that work are the following. Root creeping, perennial. Stems from ascending

^h Withering.

ⁱ Relhan.

^k Withering.

^l Bauh. theat.

^m Smith spicil.

ⁿ Krock.

^o Haller, Withering, Lightfoot.

^p Withering.

^q Linn. suppl.

^r Linn. spec.

^s Obs. 1. 16.

^t Leers.

erect, smooth, round, a foot or more in height, with a few, alternate, sheathing, recurved, pointed leaves, cylindrical or compressed, hollow, divided by numerous transverse partitions, which make the dried leaves appear jointed. Panicle terminal forked, more or less compound, the flowers from three to five or six together, sessile, in little heads enveloped in membranous bractes. Calyx-leaves lanceolate, pointed, longer than the stamens. Style very short, with three long downy stigmas. Capsule sharply triangular, polished brown.

14. This differs from the two preceding in having either all the flowers or a few of them growing out into green and purple bundles of leaves^u.

The flowers in autumn are frequently viviparous, the germs shooting young leaves before the seeds are ripe, as in *J. bulbosus*.

The jointed Rush also frequently produces bunches of reddish leaves, instead of umbels of flowers, in bogs and ditches in the autumn. These leaves seem to put on this appearance from some obstruction in the growth of the plant, occasioned by an insect of the *Coccus* tribe^x.

Native of wet heaths and bogs: as Gamlingay heath, Bullington Green, Eynsham heath.

15. Root creeping. Leaves pointed, seldom jointed. Culms five or six inches high, terminating in a simple umbel of black shining flowers, with a hard lanceolate point. Capsule short, and more blunt than in the preceding species^y.

Native of the Alps and the high mountains of Dauphiné.

These four are probably varieties arising from situation.

16. Root perennial, horizontal, extremely fibrose. Culm a span or a foot in height, upright, somewhat leafy, smooth, compressed, convex on one side, flatter on the other, having two joints, the lower (sometimes two) near the root, covered with sheaths, the other below the panicle and naked. Leaves bifarious, smooth, striated underneath, slightly sheathing, shorter than the culm; sheaths heaped at the base of the culm, compressed, keeled, having a very thin white membrane on each side, with a prominent tip. Floral leaves two, very like those of the culm, upright; the lower the length of the corymb, the upper shorter. Panicle upright, unequal, corymbed when the fruit is ripe. Peduncles three or four, subdivided, the primary one always longer than the rest: bractes lanceolate-bristle-shaped. Flowers solitary, small, coloured, terminating, most usually in threes, the middle one axillary, sessile. Calycine scales ovate, white. Petals (calycine leaflets) oblong, very blunt, almost upright when in blow, the three inner thinner, purplish. Stigmas prominent far beyond the flower. Capsule subglobular, almost oval, brown, shining, longer than the calyx, terminated by a scarcely apparent style. Seeds fulvous, pellucid^z.

With us, the bulbous Rush varies in height from two inches to two feet. It is sometimes viviparous.

Native of wet meadows and heaths, and on the sea-coast; flowering in august.

17. Root annual, fibrose. Culms usually from seven to nine inches in height (but varying much from one to ten inches), upright, roundish, smooth. Culm-leaves few, somewhat sheathing, linear, keeled. Bractes lanceolate-bristle-shaped, the lower leaf-shaped. Flowers solitary, sessile; a single one always axillary in each division of the culm; the rest towards the ends of the branches, on one side and remote. Calycine scales ovate-acuminate, white. Petals (calyx-leaves) lanceolate-awl-shaped, very sharp, the three inner ones shorter. Capsule oblong, subtrigonal, very blunt, brown, shining, shorter than the calyx, three-valved. Receptacle awl-shaped, tripartite, numerous brown seeds affixed on both sides to each division.

In the smaller plants the leaves are very slender, not angular, but folded together. Flowers mostly in pairs, and only one sessile, but in all, the ripe capsules are brown, shining and shorter than the calyx^b. This is likewise found sometimes viviparous^c.

Native of wet gravelly or sandy pastures, especially where water stagnates in winter. It flowers from may to august.

18. Root perennial, simple, jointed, with solitary radicles, covered with the remains of the leaves of the preceding year. Culm a span high, upright, round, smooth, leafy. Stem-leaves two; the lower of the same length with the culm, awl-shaped, roundish, compressed a little, scarce apparently striated, brown at the tip, channelled at the base, with membranaceous, embracing margins; the upper shorter, and not attaining the same height with the preceding. Spathe, or third terminating leaf awl-shaped, channelled, purplish with a brown tip, an inch long. From this proceed two stiff peduncles; the outer very short; the inner the length of the spathe, and straight; each terminated by a two-flowered, two-valved glume; valves small, membranaceous, white, concave, sharpish, equitant at the base, one third of the length of the flowers. The three outer segments of the calyx lanceolate, narrower, stiffer, striated on the back, purple; the inner broader, thinner, flatter, white scarcely tinged with purple; all sharp, permanent, attenuated and withering as the fruit ripens. Filaments scarcely the length of the calyx. Germ almost the length of the calyx, ovate, three-sided. Capsule longer than the calyx, shining, brown, rufous at the tip, half-three-celled, many-seeded: valves ovate, bluntish, a little recurved at the tip; partitions from the centre to the base, gradually vanishing towards the middle. Seeds three-sided, acuminate at both ends, shining, whitish. Linneus at first confounded this with *J. bufonius*, from which it is very distinct. It is a native of Sweden in deep wood bogs. Linneus had it from Lapland and Upland. Probably it has not been distinguished from *J. bufonius*, and may perhaps be a native of Britain^d.

19. Root perennial, brown, horizontal, knobbed, sending forth very long fibres perpendicularly. Culms several, quite simple, round, upright, from three to six inches high, with a few sheaths at the base. On each culm a single leaf, awl-shaped, round, slightly grooved, acuminate and mortified at the end, almost upright, sheathing at the base, varying in situation, but never at the bottom of the culm. Root-leaves some, of the same structure. A two-leaved or one-leaved glume, lanceolate-awned, thin, membranaceous, pale-brown, terminates the culm. A short, branched peduncle collects from three to seven flowers (or ten, according to Haller), on very short pedicels, and large in proportion to the plant; closed, acuminate, triangular. Calycine glumes roundish, concave, blunt, small, purplish brown. Leaflets of the perianth lanceolate, concave, mucronate, rigid, very dark bay, shining. Filaments very short; anthers linear, long, yellow, almost equalling the flower. Stigmas writhed spirally, red, villose, and double the length of the flower. Capsule blunt, grooved. Seeds few, ovate, acuminate. The whole plant is smooth.

Native of the Alps, flowering in june^e.

20. Root perennial, fibrose, simple, perpendicular. Culm seldom an inch in height, round, marked with a single streak, covered at bottom with the remains of withered leaves, at top with the sheath of the single leaf, which is the length of the scape, shining, twice as thick as the culm, tubular, mortified at the end, channelled below, sheathing the culm up to the middle. Leaves four or five surrounding the lower part of the culm, and changing into scales. Glume terminating; outer valve large, ovate, acuminate, very dark purple, green on the back, keeled; lower only half the size, acute, all dark-purple. Leaflets of the perianth of the same colour with the glume, but the three outer marked with a greenish line along the middle of the inner side, lanceolate, narrower at bottom. Three of the filaments opposite to the inner leaflets of the perianth near the base, the three others fixed at the base of the germ, all, however, finishing at the same height. Germ blunt, somewhat ciliate at the corners. Stigmas purplish, pubescent, the length of the style.

^u Leers.

^x Lightfoot.

^y Villars.

^z Leers.

^a Ibid.

^b Withering.

^c Lightfoot.

^d Smith.

^e Jacqu. austr.

This Rush has the appearance of *Schoenus ferrugineus*, and is a native of the Lapland alps, where it was found by Montin^f.

21. Culms in tufts, three inches high or more, soft, covered at the base with brown sheaths. Culm-leaves two, round, fistular, half the length of the culm, from broad sheaths. Head of unequal height, with the three flowers peduncled. The two first glumes large, keeled, ovate-lanceolate, bay with a mixture of red, white at top: the third glume within the others, and not two at the base. Outer leaves of the flower larger, of a bay rufous colour; the inner paler. Capsule large, ovate and three-sided. Seeds acuminate^g.

Root-leaves sheathing the culm, flat, like those of Grass. Culm without branches or leaves, terminated by a glume, within which are three sessile flowers^h.

Native of the Lapland alps, Denmark, Switzerland, Austria, Italy, Siberia.

22. Root perennial, with numerous brown fibres, and short pointed shoots, so that it is somewhat creeping. Culms many, about a span or more in length, nearly upright, leafy, naked above, simple, smooth, striated, round, furnished with three or four joints, which are not protuberant. Root-leaves numerous, three or four inches long, three lines, or three lines and a half broad, somewhat narrower at the base, a little concave, dull green on the upper surface, smooth and rather glossy, beneath paler green and slightly glossy, at the edges especially, covered with a few long hairs, which are most numerous towards the base of the leaf, often of a reddish colour, a little blunt, and as it were cut off at the point. Flowers forming a spreading panicle. Flower-stalks of unequal lengths, a few simple, most of them proliferous, dichotomous or trichotomous, finally stretching out backwards, all supporting a single flower, the intermediate ones sessile. Perianth-leaves oblong, pointed, keeled, concave, purplish-brown and permanent. Germ pointed.

This and the following species are distinguished by their grass-like hairy leaves. *J. pilosus* differs from *campestris*, not only in its place of growth, but in having its flowers stand singly, and not in clusters. Whilst the *campestris* delights in exposed places, the *pilosus* is found only in woods and shady situations. From this circumstance we may perhaps account for its flowering earlier than any of the others; for if the season be not very unfavourable, it will begin to flower in february, and is usually out of bloom the beginning of mayⁱ.

23. Culm a foot in height at most. Root-leaves scarcely two lines in breadth, subhirsute, but with the sheath smooth, springing from a little tuft of brown, membranous scales. Culm-leaves four or five, narrowing insensibly, springing from a sheath as long as themselves, and producing a pencil of long silky hairs at its separation from the stem. Flowers very numerous, in a false umbel, on peduncles that are filiform, and diminish in length as they are higher on the stem, inasmuch that the lower ones stand higher at top than the upper ones. They have at their base lanceolate, villose, russet-coloured bractes. Flowers rude, small, solitary. Calyx-leaves two-thirds only of a line in length, and less than half a line in breadth, blunt, ending in a point or short awn; they vary in colour, being whitish, russet, pale yellow or brown, but they are constant in figure and size^k. Native of the Alps.

24. The leaves of this are not only much broader and more concave, but more sharply pointed than those of the *pilosus*; it flowers three weeks or a month later; and when the flowering is over, the peduncles of the *pilosus* are more reflexed or pendulous than those of the *sylvaticus*. It flowers in may, or earlier, if the season be mild. In some situations this species is very large and tall, but it more usually occurs with a stalk little more than a foot high. If the height of *campestris* be nine inches, that of *pilosus* is eleven, and of *sylvaticus* fifteen. It is not uncommon in woods^l.

25. Height three feet. Leaves scarcely a line in breadth. Panicle of the umbel convex. Two long

narrow leaves rise above it, near one another, at the base of the umbel, and a little higher. Stipules under the branches long, stiff, jagged: bractes short, ovate-lanceolate, snow-white, shining. Flowers the handsomest of any in this genus. Calyx-leaves white, smooth; the inner three lines long; the outer only half that length; all lanceolate^m.

Native of the Alps of Switzerland, &c.

26. Root perennial, somewhat woody, with numerous blackish fibres, creeping. Culm simple, from three to nine inches high, upright, leafy, somewhat enlarged at bottom, round, smooth, without joints. Leaves pointed, the tips often mortified, or of a reddish brown colour, without any membrane. Two small, upright, unequal leaves, placed under the spikelets, terminate the stalk. Spikelets generally three, subovate, upright when the plant is in flower, on unequal pedicels, the lowest spikelet nearly sessile. Peduncles filiform, proceeding from a small sheath edged with hairs. Flowers ten or twelve in each spikelet, sessile. Four small scales, ovate-acute, membranous, unequal, much shorter than the calycine leaflets, surround the base of each floret. Calycine leaflets lanceolate-acuminate, spreading, permanent, shining, keeled, brownish-purple. Anthers oblong, the length of the calyx, four-grooved, two-cusped, when the pollen is shed becoming twisted. Seeds usually three, roundish, olive-coloured. Thus the Field-Rush appears in its most usual state in dry pastures: in such situations it has seldom more than three or four spikelets: in moister richer soils, particularly in boggy ground, it often has a much greater number. But although it may vary in size and number of parts, it still continues very distinct from the *pilosus*. It flowers in april and may, and ripens its seeds in june. It indicates a dry, and consequently not luxuriant pasturage. The hairs proceed from the edges of the leaves, and appear as if some animal had left its hairs on them by rubbingⁿ.

27. Linneus, in his *Flora Suecica*, considers this as so nearly allied to the preceding, as to be perhaps only a variety. In his *Flora Laponica*, however, he has figured and described it thus. Root-leaves ten or twelve, upright, acuminate. Culm very slender, with three small leaves, one at the base, a second in the middle, and a third at the top. Spike single, loose, ovate-oblong, composed of many flowers.

Dr. J. E. Smith affirms that this and *campestris* are perfectly distinct. It is five or six inches high, with a terminating spike, pointing almost horizontally, about half an inch long^o.

Native of Lapland, Denmark, Scotland.

28. Culms leafy, round, as thick as the little finger, from four to six feet high. Leaves alternate, grassy, hard, even, somewhat nerved, scarcely the length of the culm. Panicle conglomerate, not very spreading; flowers scatteringly conglomerate. It is allied to *J. pilosus*, but is much larger even than *J. acutus*.—Native of the Cape of Good Hope.

29. Scarcely a foot high, very smooth. Culm round, covered with sheaths at the base. Leaf single, round, awl-shaped, straight, longer than the culm. One large, upright flower terminates the culm. Calycine valves upright, acute, alternately shorter. Stamens and pistils shorter than the calycine valves^p.

JUNCUS. See *Acrostichum*, *Butomus*, *Cornucopia*, *Cyperus*, *Restio*, *Scheuchzeria*, *Schoenus*, *Scirpus*.

JUNCUS ODORATUS. See *Andropogon* & *Oenanthe*.

JUNGERMANNIA. (So named from Louis Jungermannus of Leipzig, professor of Botany at Altorff; author of *Flora Altorff*. 1615. and *Flora Giesensis*, 1623.)

Lin. gen. n. 1196. Reich. 1313. Schreb. 1662.

Mich. 5. Schmidel. monogr. 1760. ic. t. 22, 35.

42, 48, 55, 62, 63, 64, 67, 68. Hedw. theor.

83. t. 15—23. Muscoides, Mich. 6. Lichenastrum. Dill. musc. 479. Andreæa, Ehrh.

beytr. 1. 180.

Class. 24. 3. Cryptogamia Algæ. Linn.

—4. — Hepaticæ. Schreb.

Nat. order of *Hepaticæ*, Juss. 8.

^f Linn. amoen.
^g Curtis.

^h Haller.
^k Villars.

^l Linn. suec.
^m Curtis.

ⁿ Haller. ^o Curtis. ^p Withering. ^q Linn. suppl.

GENERIC CHARACTER.

* *Male flowers* sessile, clustered, on the leaves, stem, frond.

CAL. scarce any.

COR. none.

STAM. *Filaments* hardly any. *Anthers* ovate, one-celled, gaping at the tip.

* *Female flowers* on the same, or on a separate individual.

CAL. *Perianth* upright, tubular; truncated, crenated, or laciniated.

COR. *Calyptra* sessile, smaller than the perianth, subglobose, closed on every side, membranaceous, tender, crowned by the style, at length bursting at the tip.

PIST. *Germ* oblong, involved by the calyptra, sessile; style straight, short, passing through the top of the calyptra; stigma simple.

PER. *Capsule* seated on a long and very tender bristle, globose, one-celled, at length gaping longitudinally into four valves, which are equal, spreading, permanent.

SEEDS many, globose, adhering by twisted elastic threads fixed to the bottom, tip, disk, or margin of the valves.

Obs. Several germs are often found in one perianth, of which, however, only one grows to maturity.

The Stemless *Jungermannia* have their anthers within the substance of the fronds, and want the perianth of the female flowers: Qu. Whether they do not constitute a distinct genus?

Thirty species of these Mosses are arranged in five subdivisions, in the fourteenth edition of *Systema Vegetabilium*. Mr. Hudson has thirty species in the second edition of his *Flora Anglica*. Dr. Withering has forty-eight species in the third edition of his *Arrangement of British Plants*. He distributes them into four subdivisions:

A. Plant unbranched, and without a midrib.

B. 1. Leaves winged: fruit-stalks terminating.

2. Leaves winged: fruit-stalks lateral, or at the base.

C. 1. Leaves winged: leaflets with appendages: fruit-stalks terminating.

2. Leaves winged: leaflets with appendages: fruit-stalks lateral, or at the base.

D. Shoots tiled or imbricate.

Figures of these Mosses will be found in Dillenius, Micheli, Vaillant, Hedwig, Dickson, Schmidel, Flora Danica, English Botany, Morison, Withering, &c.

Many of the species are beautiful microscopic objects, according to the remark of Dr. Withering.

JUNGERMANNIA. See *Mnium*.

JUNGHANSIA. See *Curtisia*.

JUNGIA. (So named from *Joachim Jungius*, M.D. Professor at Hamburg: author of *Doxoscopia*, 1662. and *Phytoscopia*, 1678.)

Lin. gen. Schreb. n. 1348. suppl. 58. Juss. 175.

Class. 19. 5. Syngenesia Polygamia Segregata.

Nat. order of *Compositæ Oppositifoliae*.

Cinarocephalæ. Juss.

GENERIC CHARACTER.

CAL. Common many-leaved: leaflets somewhat spreading, linear, obtuse, channelled, shorter than the partial perianth, involving three or four flowers.

Perianth partial, many-leaved, almost equal, many-flowered: leaflets oblong, channelled, obtuse, upright.

COR. Compound uniform; corollets hermaphrodite, equal; proper one-petalled, funnel-shaped; tube gradually widened: border two-lipped: the exterior division rolled back, longer, linear, toothed at the tip: the interior two-parted; the two segments upright, sharp.

STAM. *Filaments* five, very short, inserted into the tube. *Anthers* connate.

PIST. *Germ* inferior, linear, cornered. *Style* filiform. *Stigmas* two, revolute, obtuse.

PER. none. Calyx unchanged.

SEED solitary, cornered. Down long, sessile, feathered.

REC. chaffy. Chaffs resembling the calycine leaflets.

ESSENTIAL CHARACTER.

CAL. common three-flowered. Recept. chaffy. Florets tubular, two-lipped; outer lip ligulate, inner two-parted.

SPECIES.

1. *Jungia ferruginea*.

Lin. syst. 797. suppl. 390.

DESCRIPTION, &c.

Stems woody, covered with a ferruginous down. Leaves alternate, petioled, remote, flat, rounded, five-lobed, cordate at the base: lobes rounded, blunt; they are hirsute, and underneath hoary. Panicle terminating, large, decompounded. Heads of flowers small, heaped. Native of South America^a.]

JUNIPERUS (of Pliny, &c.)

Lin. gen. n. 1134. Reich. 1240. Schreb. 1552.

Gartn. t. 91. Tournef. t. 361. Juss. 413. Tournef. 361.

Sabina. Boerb. 2. 207. Cedrus. Tournef. 361.

Class. 22. 13. Dioecia Monadelphica.

Nat. order of *Coniferae*.

GENERIC CHARACTER.

* Male.

CAL. Ament conical, consisting of a common shaft on which are disposed three opposite flowers in triple opposition; a tenth terminating the ament: each flower has for its base a broad, short, incumbent scale affixed to the column of the receptacle.

COR. none.

STAM. *Filaments* (in the terminal floscule) three (four to eight) awl-shaped, united below into one body: (in the lateral flowers scarce manifest;) *Anthers* three, distinct in the terminal flower, but fastened to the calycine scale, in the lateral ones.

* Female.

CAL. *Perianth* three-parted, very small, growing to the germ, permanent.

COR. *Petals* three, permanent, rigid, acute.

PIST. *Germ* inferior. *Styles* three, simple. *Stigmas* simple.

PER. *Berry* fleshy, roundish, marked on the lower part with three opposite obscure tubercles, (from the calyx having grown there) and at the tip by three teeth (which before were the petals), umbilicated.

SEED three officles, convex on one side, cornered on the other, oblong.

ESSENTIAL CHARACTER.

MALE. Calyx of the ament a scale. Cor. none. Stam. three.

FEM. Cal. three-parted. Pet. three. Styles three. Berry three-seeded, irregular with the three tubercles of the calyx.

SPECIES.

1. *Juniperus thurifera*. Spanish Juniper.

Lin. spec. 1471. Reich. 4. 276.

J. hispanica. Mill. dict. n. 13.

Cedrus hispanica procerior, fructu maximo nigro. Tourn. inst. 588.

Leaves imbricate in four rows, acute.

2. *Juniperus barbadensis*. Barbadoes Juniper.

Lin. spec. 1471. Reich. 4. 276. Lour. cochinch.

636. Thunb. jap. 264. Pluk. phyt. t. 197. f. 4.

J. bermudiana. Hort. angl. t. 1. f. 1.

All the leaves imbricate in four rows, the younger ovate, the older acute.

3. *Juniperus bermudiana*. Bermudas Juniper.

Lin. spec. 1471. Reich. 4. 276. Brown. jam. 362.

Herm. lugdb. t. 347. Raii hist. 1414.

Lower leaves in threes, upper in pairs, decurrent, awl-shaped, spreading, acute.

4. *Juniperus chinensis*. Chinese Juniper.

Lin. syst. 894. Reich. 4. 277. mant. 127. Lour.

cochinch. 636.

Leaves decurrent, imbricate-spreading, clustered, stem-leaves in threes, branch-leaves in fours.]

5. *Juniperus Sabina*. Savin.

Lin. spec. 1472. Reich. 4. 277. hort. cliff. 464. 3.

ups. 299. mat. med. 217. Woodv. med. bot. 256.

t. 94. Gouan. hort. monsp. 510. Hall. herb. n.

1662. Scop. carn. n. 1228. Gmel. fib. 1. 183.

n. 34. Pall. it. 3. 368. fl. rofs. 1. 2. 15. t. 56. f. 2.

* Linn. suppl.

- α. *J. lusitanica*. Mill. dict. n. 11.
J. S. cupressifolia. Common Savin.
 Ait. hort. kew. 3. 414. α.
Sabina. Dod. pempt. 854. Blackw. t. 214.
S. folio cupressi. Baub. pin. 487. Duham. arb. 2.
 t. 62. Raii hist. 1415.
 β. *J. Sabina*. Mill. dict. n. 10.
J. S. tamariscifolia. Tamarisk-leaved Savin.
 Ait. hort. kew. 3. 414. β.
S. fol. tamarisci Dioscoridis. Baub. pin. 487. Raii
 hist. 1415.
 Leaves opposite, erect, decurrent, the oppositions boxed.
6. *Juniperus virginiana*. Virginian Juniper, or Red Cedar.
 Lin. spec. 1471. Syst. 894. Reich. 4. 277. hort.
 cliff. 464. 2. Gron. virg. 2. 157. Kalm. it.
 3. 119. Thunb. jap. 264.
J. caroliniana. Mill. dict. n. 4. Reich.
J. major americana. Raii hist. 1413. 1414.
J. maxima cupressi folio minimo, &c. Sloan. jam. 2. 2.
 t. 157. f. 3. Raii dendr. 12.
 Leaves in threes, fastened at the base, the younger ones
 imbricate, the older spreading.
7. *Juniperus communis*. Common Juniper.
 Lin. spec. 1470. Reich. 4. 278. hort. cliff. 464.
 n. 1. fl. succ. n. 915. lapp. n. 376. mat. med. 217.
 Woodv. med. bot. 259. t. 95. Hudf. angl. 456.
 Wither. arr. ed. 3. 599. Gært. fruct. 2. 62.
 Hall. herb. n. 1661. Scop. carn. n. 1229. Pollich.
 pal. n. 904. Leers herb. n. 768. Pallas.
 rofs. 1. 2. 12. t. 54. Du Roi herb. 1. 338.
 Gmel. fib. 1. 182. Sauv. monsp. 169. Blackw.
 t. 187. Mill. illustr. Fl. dan. t. 1119. Zorn.
 ic. 178.
 α. *J. vulgaris*. Park. theat. 1029. 1.—fruticosa.
 Baub. pin. 488.
Juniperus. Camer. epit. 53. Ger. 1189. 1. emac.
 1372. 1.—vulg. baccis parvis purpureis. Baub.
 hist. 1. 293. Raii hist. 1411.
 β. *J. suecica*. Swedish Juniper.
 Mill. dict. n. 2.
J. vulgaris arbor. Baub. pin. 488.
 γ. *J. minor montana*, folio latiore, fructuque longiore.
 Baub. pin. 489.
J. alpina. Baub. hist. 1. 302. 1. Clus. hist. 1. 38. 2.
 Raii hist. 1413.—minor. Ger. emac. 1372. 3.
 Leaves in threes, spreading, mucronate, longer than the
 berry.
8. *Juniperus Oxycedrus*. Brown-berried Juniper.
 Lin. spec. 1470. Syst. 895. Reich. 4. 278. mant.
 499. Scop. carn. n. 1227. Du Roi herb.
 1. 344. Gouan. monsp. 509. Sauv. monsp. 169.
 alt. 1743. p. 52.
J. major bacca rufescente. Baub. pin. 489. Duham.
 arb. 2. 326. t. 128. Raii hist. 1413.
Oxycedrus. Clus. hist. 1. 39.
 Leaves in threes, spreading, mucronate, shorter than the
 berry.
9. *Juniperus phoenicea*. Phenician Juniper or Cedar.
 Lin. spec. 1471. Reich. 4. 279. Gouan. hort. monsp.
 509. Pallas. rofs. 1. 2. t. 57.
J. major. Clus. hist. 1. 38. Lob. ic. 221.
Cedrus folio cupressi major, fructu flavescente. Baub.
 pin. 487. Raii hist. 1414.
Sabina folio tamarisci. Duham. arb. 2. 242. t. 63.
 Pallas.
 Leaves in threes, obliterated, imbricated, obtuse.
10. *Juniperus lycia*. Lycian Juniper or Cedar.
 Lin. spec. 1471. Reich. 4. 279. mat. med. 217.
 Woodv. med. bot. 569. t. 206. Sauv. monsp. 169.
 Gouan. monsp. 509. Gmel. fib. 1. 182. Gron.
 orient. 320. Pallas. it. 2. 522. rofs. 1. 2. t. 56.
 f. 1.
Cedrus folio cupressi media majoribus baccis. Baub.
 pin. 487.
C. phoenicea altera Plinii & Theophrasti. Lob. ic.
 221.—media ejusd. ic. 221.
 Leaves in threes, imbricate on all sides, ovate, obtuse.
11. *Juniperus drupacea*.
 Billard. ic. syr. 2. 14. t. 8.
J. major. Bellon. obs. 2. 162. Clus. hist. 1. 38?
 Leaves in threes, spreading, acute, three times shorter
 than the drupe, nut three-celled.

12. *Juniperus daurica*. Siberian Juniper.
 Pallas. rofs. 1. 2. 13. t. 55. Gmel. fib. 1. 183.
 n. 35.
 Leaves opposite, acute, imbricate-decurrent, spreading,
 awl-shaped.]

DESCRIPTIONS, &c.

1. Spanish Juniper grows to the height of twenty-five or thirty feet, and sends out many branches, which form a sort of pyramid. Leaves acute, lying over each other in four rows, so as to make the branches four-cornered. Berries very large, black when ripe. Native of Spain and Portugal. Cultivated in 1759 by Mr. Miller.

2. Barbadoes Juniper or Cedar, or Jamaica berry-bearing Cedar has been confounded with the Bermudas Cedar; but the branches of this spread very wide, the leaves are extremely small, and are every where imbricate; the bark is rugged, splits off in strings, and is of a very dark colour. The berries are smaller than those of the Bermudas Cedar, and are of a light brown colour when ripe.

It is a native of the West Indies, where it rises to be one of the largest timber trees: the wood is frequently fetched from thence by the inhabitants of North America, for building ships. [It is also an inhabitant of China and Japan.] Cultivated in 1759, by Mr. Miller.

3. Bermudas Juniper, commonly called Bermudas Cedar, whilst young, has acute-pointed leaves, which spread open, and are placed by threes round the branches; but as the trees advance their leaves alter, and the branches become four-cornered; the leaves are very short, and lie over each other by fours round the branches. The berries are produced towards the ends of the branches, and are of a dark red colour, inclining to purple. The wood has a very strong odour, and was formerly in great esteem for wainscoting rooms, and also for furniture.

[Native of America. Dr. Patrick Browne says, that it grows very plentifully in most of the Blue Mountains of Jamaica, where it is frequently cut down for planks, &c.; that it is a good timber-wood, admired for its smell, lightness, and close even grain; very fit for wainscoting, and all the inward parts of cabinet-work.—Cultivated in 1700 by the Earl of Clarendon.]

4. Loureiro describes the Chinese Juniper as a shrub of three feet in height, with twisted and very spreading branches. Leaves awl-shaped, hardish, dark green—according to Linneus spreading, green on both sides, more clustered than in the other sorts, fastened at the base, scarcely pungent, extremely distinct by the density of the leaves^b. Native of China.

5. Mr. Miller makes two species of the Common or Cypress-leaved, and Tamarisk-leaved or Berry-bearing Savin, as he calls it.] The former, he says, has by many been supposed to be only an accidental variety; but the branches grow more erect, the leaves are shorter, and end in acute points which spread outwards. It rises to the height of seven or eight feet, and produces great quantities of berries: whereas the Tamarisk-leaved Savin very rarely produces either flower or seed in our gardens. β. This sends out its branches horizontally, and seldom rises more than three or four feet high, but spreads to a considerable distance every way. Leaves very short, acute-pointed, running over each other along the branches, with the ends pointing upwards. The berries are smaller than those of Common Juniper, but of the same colour, and a little compressed. The whole plant has a very rank odour when handled. [There is a variety with variegated leaves. Savin is a native of the South of Europe and the Levant. It was cultivated here in 1562, as we learn from Turner^c: but probably it is a much older plant in our gardens.]

Professor Pallas says, that in the Chersonesus taurica, where it is very common, the Savin is often found with a trunk a foot in diameter; that it grows upright there like a Cypress, whereas by the Tanais it is procumbent, the branches extending on the sand several fa-

^a Hort. kew.^b Mant.^c Hort. kew.

thorns; that the wood very much resembles that of *J. lycia*, but has a more cadaverous smell, and the leaves are more fetid.

6. Leaves mutually opposite by threes, fastened at the base by their inner side, in the new shoots imbricate in four rows, giving them the appearance of being quadrangular; the year following these spread from the branch at an acute angle, and appear to be disposed in six rows or longitudinal phalanxes^d. Berry dark blue, covered with a whitish resinous meal^e.

Native of North America, the West India islands and Japan.

It grows to be one of the largest and highest timber trees in Jamaica, affording very large boards, of a reddish brown colour, close and firm contexture, shining, very odoriferous, extremely like Bermudas Cedar, being towards its outides of a paler colour and looser contexture. The bark is thin, and ready to drop off in great pieces, appearing somewhat contorted, of a reddish brown colour. This tree is much used for wainscoting rooms, making escritoirs, cabinets, &c. Cockroches and other insects disliking the smell of it^f.

I should suspect Sloane's tree to be the Bermudas Cedar.

Mr. Miller has two species. (n. 3, 4.)] The first he names *J. virginiana*, which he says grows naturally in most parts of North America, where it is called Red Cedar, to distinguish it from a sort of Cypress, which is called White Cedar there. Of this there are two or three varieties; one of which has leaves in every part, like those of the Savin, and upon being rubbed, emit a very strong ungrateful odour: this is commonly distinguished in America by the name of Savin-tree. There is another with leaves very like those of Cypress; but as these generally arise from the same seeds, they may be supposed to be only seminal varieties.

The second he names *J. caroliniana*. The leaves of this are like those of the Swedish Juniper, but the upper leaves are like those of the Cypress; and this difference is constant, if the seeds are carefully gathered from the same tree; but it often happens that persons who gather the seeds in America mix two or three sorts together. In the Virginia Cedar all the leaves are like those of Juniper. The Carolina Cedar, as the gardeners call it, is also a native of Virginia.

Cultivated here in 1664, according to Evelyn.

7. Juniper is a low shrub, seldom rising more than three feet high, sending out many spreading tough branches, which incline on every side, covered with a smooth, brown or reddish bark, with a tinge of purple. Leaves narrow awl-shaped, ending in acute points, placed by threes round the branches, pointing outwards, bright green on one side, and gray on the other, continuing through the year. The male flowers are sometimes on the same plant with the females, but at a distance from them; but they are commonly on distinct plants. The female flowers are succeeded by roundish berries, which are first green, but when ripe of a dark purple colour. [They continue on the bush two years, and are sessile in the axil of the leaves. Gærtner calls the fruit *galbulus*; and describes it as spherical, berried, blackish-blue, covered with a bloom, marked at top with three raised dots, and a three-forked groove, received at bottom in a very small starred involucre: it is juiceless, spongy-fleshy, and contains three stones. These are bony, one-celled, valveless, gibbose, on one side from a broad and convex back narrowed towards the base and keeled, on the other very bluntly angular, or marked with a longitudinal ridge, and at the base on the outside with four oblong little excavations, into each of which a balsamiferous gland is inserted. Seed single, ovate-acuminate, dun-coloured with a brown mark at the base. Geoffroy first remarked these glands in 1721; but he reckoned only eight, whereas there are twelve, namely four to each seed.

Juniper is common in all the northern parts of Europe, in fertile or barren soils, on hills or in valleys, in open sandy plains or in moist and close woods. On the sides of hills its trunk grows long, but on the tops

^d Linn. cliff.

^e Clayt, in Gron.

^f Sloane.

of rocky mountains and on bogs it is little better than a shrub^g. In England it is found chiefly on open downs, in a chalky or sandy soil. In the Southern countries of Europe it is less common, except in more elevated situations.

When planted in a good soil it will grow fifteen or sixteen feet high, and form a well-looking bushy shrub. Mr. Evelyn mentions a slender bush of two feet in height, brought from a common, which in ten years measured seven feet square and eleven feet high, and would have been of a much greater altitude and farther spreading, had it not continually been kept shorn. —It is easily transplanted, and bears cropping. Grass will not grow beneath it, but the *Avena pratensis* destroys it. The wood is hard and durable. The bark may be made into ropes. Spirit impregnated with the essential oil of these berries is every where known by the name of Juniper water or Gin. The berries sometimes appear in an uncommon form: the leaves of the calyx grow double the usual size, approaching, but not closing, and the three petals fit exactly close, so as to keep the air from the *Tipula Juniperi*, which inhabit them. Other insects feed on this shrub, as *Cimex juniperinus*, *Thrips juniperina*, and *Coccinella novempunctata*. Horses, sheep and goats eat it. Gum Sandarach, known under the name of *Pounce* in its powdered form, is the produce of this shrub^h.]

β. Swedish or Tree Juniper rises to the height of ten or twelve (even sixteen or eighteen) feet; the branches grow more erect than those of the common Juniper; the leaves are narrower, end in more acute points, and are placed farther asunder on the branches; the berries also are longer. It is a native of Sweden, Denmark and Norway. Mr. Miller insists on this being a distinct species, because having raised both from seed for many years, he never found them alter. [Plants raised from seeds have a tendency to grow higher than those which are cropped by cattle; and this misled Mr. Miller, for these are certainly no more than varieties.

γ. Nor is the Alpine or Mountain Juniper at all different from the Common, though the leaves be broader and thicker; the berries rather oval than spherical.

8. Branchlets three-sided. Leaves sessile (by no means adnate), altogether as in *J. communis*, but larger in all the parts. Berries rufescent, the size of a hazel-nutⁱ.]

Height ten or twelve feet, branched the whole length. Branches small and taper, having no angles, as most of the other Junipers have. Leaves small, obtuse, imbricate. Male flowers at the ends of the branches in conical scaly aments: the berries below from the side of the same branch.

[This shrub will be feathered from top to bottom, if left untouched from the first planting, or if not crowded with other trees. Leaves awl-shaped, and finely spread open; they are very short, sharp-pointed, and give the shrub a fine look. The large brownish red berries make a handsome appearance when they are ripe^k.

Native of Spain, Portugal, and the South of France. —Cultivated in 1739, by Mr. Miller^l.]

9. Phenician Cedar or Juniper grows with its branches in a pyramid; the lower ones have short, acute-pointed, grayish leaves, pointing outwards; but those on the upper branches are dark-green and imbricate, ending, however, in acute points. The male flowers are produced at the extremity of the branches, in a loose scaly conical ament, standing erect on a short peduncle: the fruit is sometimes upon the same tree, at a distance from the male flowers, but more generally on separate trees. Berries pale yellow when ripe, about the size of those of common Juniper.

[Leaves ovate, convex, blunt, very minute^m. Branches, branchlets and fronds thick, dichotomous, and even woody, with the remains of scales; the older branches having a dusky testaceous bark. Fronds imbricate, with decurrent leaflets in threes, with very long sharp pointsⁿ.

^g Linn.

^h Withering.

ⁱ Linn. mant.

^k Hunter in Evel.

^l Hort. kew.

^m Linn.

ⁿ Pallas.

Ray regards this as scarcely different from the next species^o.

Native of the South of Europe and the Levant. Cultivated in 1683, by Mr. James Sutherland^p.] Mr. Miller says, he has frequently received the berries from Portugal.

10. Lycian Cedar has the branches growing erect, and covered with a reddish-brown bark. Leaves small, obtuse. Male flowers at the ends of the branches in a conical ament; and the fruit single from the axils below them, on the same branch. Berries large, oval, and when ripe brown.

[According to Pallas, it is entirely prostrate, with the trunk branching from the very bottom, often thicker than the human arm. This and the branches are often compressed or variously deformed, with scarcely any outer bark. Wood smelling very strong like the American Cedar. Branches and extreme branchlets wand-like, straight, thickish, covered with a testaceous bark. Shoots dark-green, dichotomous, imbricate, with leaflets decussately opposite, scale-form, sharp. Berries terminating, globular, middle-sized, black when ripe, with a glaucous bloom; containing three or four stones. Seeds ovate-oblong, convex on the outside, angular-three-sided within.

Pallas remarks, that it is with difficulty distinguished from Savin; that the bruised leaves have the same smell; and that it differs from it principally in the greater thickness of the shoots, and in the leaflets being acute and less clustered. He says that the leaves are never in threes with them.

Native of the South of France, the Levant and Siberia.] Mr. Miller says that he received it both from Spain and Italy. He cultivated it in 1759.

11. Stem frutescent, erect, branched, branches spreading, branchlets three-sided. Leaves sessile, lanceolate, somewhat glaucous, with a double line above. Drupe testaceous, with a glaucous bloom, often three times as long as the leaves, large, roundish, angular, and marked with six or nine obtuse tubercles. Nut subovate, large, with three small cells, very hard, hollowed above with three lines; kernel solitary, ovate-oblong, fixed by a pellicle to the bottom of the cells.

Native of mount Cassius: and probably the same with the great Junipers observed by Belon on mount Taurus, and which he describes as rising to the height of a Cypress, and bearing a sweet fruit, the size and shape of an olive^a.

12. This is usually shrubby, with the stems lying prostrate on the rocks, the principal ones often the thickness of the human arm. Branches thickish, testaceous, the younger ones imbricate, with the remains of leaves changed into acuminate scales, which at length are cloven, and fall. Shoots green, dichotomous, imbricate with leaves that are decussately opposite, in pairs, glaucous-green, less crowded.

Respecting the leaves, there are two varieties of this Juniper. In one, the leaves are mostly scale-form, decurrent, with a short awl-shaped point, and closely imbricate, with here and there a longer needle-shaped leaf on the branchlets. This is commonly male, or with female flowers only at the incurved three-leaved tips of the branchlets. The other is commonly berry-bearing all over, except the outer younger shoots; and the leaves, like those of *J. Oxycedrus*, are acicular or needle-shaped, spreading from the base, almost as long as the berries, keel-grooved, compressed. Berries globular, more bitter than the Common Juniper, blackish when ripe, but appearing blue from the white meal that covers them, peduncled as it were by standing on a leafless thickened branchlet, containing one or two stones; kernels ovate-globular, large, margined with a blunt rib, or four-grooved, yellowish.

Native of Siberia, and totally different from *J. lycia*^r.

The virtues of some species of this genus are very considerable. The Common Juniper is celebrated for its diuretic powers: the berries are principally used; and from them a spirit is prepared and kept in the shops, and used plentifully in hydropic cases, and in diuretic draughts; boiled in water these berries give a sweet decoction, tasting very strongly of the Juniper, and from the decoction may be obtained a quantity of sugar: the berries are also considered as stomachic, carminative, and diaphoretic. Of their efficacy in many hydropical affections we have various relations from physicians of high authority; as Du Verney, Boerhaave, Hoffman, Van Swieten, &c. Authors, however, do not seem perfectly agreed which preparation of the Juniper is most efficacious; some preferring the rob or inspissated decoction, while on the contrary Dr. Cullen disapproves of this, as having unavoidably lost a good part of its essential oil, (in which he supposes a great part of the efficacy of the Juniper to consist); in the boiling. Hoffman, however, strongly recommends the rob, and declares it to be of great utility in weakness of the stomach and intestines; and particularly serviceable when such cases occur in old people: but as the modern practice generally depends on more powerful, or stronger medicines, (the Juniper being considered in a secondary view), it may perhaps be allowed that as good a form as any for its use is that of a simple decoction; and this, either by itself, or with the assistance of a small quantity of gin, may be a useful drink for hydropic patients. Medical writers have also commended it in scorbutic cases, and in some cutaneous diseases; but in these cases a decoction prepared from the wood and the tops of the plant is thought preferable to that from the berries. We are told by Linneus that the Swedes prepare a beer from the berries, which they consider as very efficacious in scorbutic cases; and that the Laplanders drink infusions of Juniper-berries as we do tea and coffee, for the same purpose. Juniper wine is sometimes made, and is said to be a very wholesome one. Gum Sandarach, used for pounce, &c. is the gum or resin of old Junipers. *Juniperus Sabina*, or *Savine*, is more powerful in its operations than the former, and has been much famed as an emmenagogue: it heats and stimulates the whole system very considerably, and is said to promote the fluid secretions: the leaves and tops of Savine have a moderately strong, disagreeable smell, and a hot, bitterish taste: they give out their active matter to watery liquors, and still more completely to rectified spirit; distilled with water they yield a large quantity of essential oil. Decoctions of the leaves, inspissated to the form of an extract, retain a considerable share of their pungency and warmth, together with their bitterness, and have some degree of smell, but not resembling that of the plant itself. On inspissating the spirituous tincture, there remains an extract consisting of two distinct substances; of which one is yellow, oily, bitterish, and very pungent; the other black, resinous, tenacious, less pungent, and very astringent. Savine, when used for the purpose of an emmenagogue, has been sometimes found to be too powerful; and it has even been supposed to possess the power of causing abortion: but this seems to be extremely doubtful, and it sometimes fails as an emmenagogue; and its heating qualities are such as to require caution in its administration. In the Edinburgh Infirmary it appears to have been used with great success by Dr. Home, in cases of amenorrhœa, given in powder, from a scruple to a dram, twice a day. Upon the whole, Savine may be considered as a warm stimulant and aperient, and particularly serviceable in uterine obstructions proceeding from a laxity or weakness of the vessels, or a cold, sluggish disposition of the juices. The distilled oil, exclusive of the powers just mentioned, is also a strong diuretic, and impregnates the urine with its smell. The dose is two or three drops, or more.

Juniperus Lycia.—This is the species from which is taken the gum-resin called Olibanum, which has a strong smell, and a bitterish somewhat pungent taste. When burnt it diffuses a fragrant smell, and is supposed to have been the incense used by the ancients in their religious ceremonies, (though not the same with the substance known by that name in the shops). It is much employed by the Roman Catholics in their churches, for similar uses. As a medicine it has chiefly been used in disorders of the head and breast, and in hæmoptoes, and alvine and uterine fluxes: the dose from a scruple to a dram or more. It has also been used

used in plasters, &c. and as an ingredient in various pills.]

PROPAGATION AND CULTURE.

These plants are all propagated by sowing their seeds, the best season for which is as soon as they are ripe, if they can then be procured; for when they are kept until spring before they are sown, they will not come up until the second year. The ground in which the seeds of the hardy sorts are sown, should be fresh and light, but it should not be dunged; it should be well dug and levelled very even; then sow your seeds thereon pretty thick, and sift some earth over them about half an inch thick; this bed will require no farther care than only to keep it clear from weeds, and toward the middle or latter end of april, you will find some of your plants appear above ground, though, perhaps, the greatest part of them may lie till the spring following before they come up; therefore you should carefully clear the beds from weeds, and in very dry weather refresh them with some water, which will greatly promote the growth of those plants which are up, and also cause the other seeds to vegetate; but if the bed in which these are sown is much exposed to the sun, it should be shaded with mats in the day; for when the plants come first up, they will not bear too much heat. In this bed they should remain till the next spring or second autumn, when you must prepare some beds to transplant them into, which should also be of light, fresh, undunged soil; and having well dug and cleansed the ground from all noxious weeds and roots, you should make it level; and then in the beginning of october, which is the proper season for removing these plants, you should raise up the young plants with a trowel, preserving as much earth as possible to their roots, and plant them into beds about five or six inches asunder each way, (or eighteen inches by nine or ten,) giving them some water to settle the earth to their roots; and if it should prove very dry weather, you may lay a little mulch upon the surface of the ground round their roots, which will be of great service to the plants. But as many of the seeds will be yet left in the ground where they are sown, the beds should not be disturbed too much in taking up the plants; for I have known a bed sown with these berries, which has supplied plants for three years drawing, some of the berries having lain so long in the ground before they sprouted; therefore the surface of the beds should be kept level, and constantly clean from weeds.

The plants may remain two years in these beds, observing to keep them clear from weeds; in the spring you should stir the ground gently between them, that their roots may with greater ease strike into it; after which time they should be transplanted either into a nursery, at the distance of three feet row from row, and eighteen inches asunder in the rows, or into the places where they are to remain. The best season to transplant them (as I before observed) is in the beginning of october, when you should take them up carefully, to preserve a ball of earth to their roots; and when planted, their roots should be mulched; all which, if carefully attended to, as also observing to refresh them with water in very dry weather until they have taken new root, will preserve them from the danger of not growing; and they being extremely hardy in respect to cold, will defy the severest of our winters to injure them, provided they are not planted in a moist or rich soil.

In order to have these trees aspire in height, their under branches should be taken off, especially where they are inclined to grow strong, but they must not be kept too closely pruned, which would retard their growth; for all these Evergreen trees do more or less abound with a resinous juice, which in hot weather is very apt to flow out from such places as are wounded; so that it will not be adviseable to take off too many branches at once, which would make so many wounds, from which their sap in hot weather would flow in such plenty, as to render the trees weak and unhealthy.

The Virginian Cedars grow to a very great height, and in their native country afford excellent timber for many uses; but with us there are very few which are

above twenty-five or thirty feet high, though there is no doubt of their growing larger; for they thrive very fast after the three first years, and resist the sharpest frost of our climate exceeding well, and are very apt to grow straight and regular, provided they are not suffered to shoot out too much at bottom.

These plants are also propagated by seeds, which must be procured from Virginia or Carolina (for they rarely produce ripe seeds in England) and sown as was directed for the other Junipers; but as this seed cannot be procured in England till spring, so when sown at that season, it remains in the ground until the succeeding spring before the plants appear; therefore you must observe to keep the beds clear from weeds, and not suffer the seeds to be disturbed, which is often the fault of some impatient people, who think, because the plants do not rise the first year, that they will never come up, and so dig up the ground again, whereby their seeds are buried; but if they are let remain, they seldom fail to grow, though sometimes it is two years after sowing before they come up. When the plants come up they must be carefully weeded, and in dry weather should be refreshed with water, which will greatly forward their growth; and the autumn following they should have a little rotten tan laid between them, to keep out the frost. In this bed the plants may remain till they have had two years growth, then they should be transplanted into other beds, as was directed before for the other sorts, observing to preserve a ball of earth to their roots; and after they are planted, if the season prove dry, they must be carefully watered, and the surface of the ground covered with mulch, to prevent the sun and wind from entering the earth to dry the fibres; but they should not be too much watered, which often proves injurious to these trees, by rotting their tender fibres soon after they are emitted, whereby the plants have been often destroyed.

In these beds they may remain two years, observing to keep them clear from weeds; and in winter you should lay a little fresh mulch upon the surface of the ground round their roots, which will prevent the frost from penetrating to them, and effectually preserve them; for while the plants are so young, they are liable to be injured by hard frosts, when too much exposed thereto; but when they have attained a greater strength, they will resist the severest of our cold.

After two years, they should either be removed into a nursery (as was directed for the common Juniper) or transplanted where they are designed to remain, observing always to take them up carefully, otherwise they are subject to fail upon transplanting; as also to mulch the ground, and water them as was before directed, until they have taken root; after which they will require no farther care, than only to keep the ground clear about their roots, and to prune up their side branches to make them aspire in height.

The soil in which you plant these trees should be fresh and light, but must not be dunged, especially at the time when they are planted; for dung is very hurtful to them, if it be not quite rotted to mould; therefore the mulch which is laid upon the surface of the ground should not be dung, but rather some old tanners bark or sea-coal ashes, which will prevent the frost from penetrating deep in the ground.

These trees being thus managed, will in a few years rise to a considerable stature, and by the variety of their evergreen leaves and manner of growth, will greatly add to the beauty of all plantations, if rightly disposed, which indeed is what we seldom observe in any of the English gardens or wildernesses; for there are few people who consider the different growths of the several trees with which they compose such plantations, so as to place the tallest growing trees the backwardest from sight, and the next degree to succeed them, and so gradually diminishing till we come to the common Juniper, and others of the same growth, whereby all the trees will be seen, and the gradual declivity of their tops will appear like a verdant slope, and be much more agreeable to the sight, as also more advantageous to the growth of the trees, than to place shrubs of humble growth near such plants as will grow

to the first magnitude, whereby the shrub is hid from sight, and will be over-shadowed and destroyed: nor can the distance which each tree requires, be so justly proportioned any other way; for in this distribution, the largest trees being separated by themselves, may be placed at a due distance; and then those of a middling growth succeeding, may be accordingly allowed sufficient room; and the smaller, which are next the sight, being placed much closer, will hide the naked stems of the larger trees, and have an agreeable effect to the sight.

The Bermudas Cedar being a native of that island, and also of the Bahama Islands, being much tenderer than any of the former sorts, except that of Jamaica, is not likely to thrive well in this country; for although many of these plants have lived several years in the open air in England, yet whenever a severe winter happens, it either kills them, or so much defaces them, that they do not recover their verdure in a year or two after.

These plants are propagated by seeds in the same manner as the former, with only this difference, that these should be sown in pots or tubs of earth, that they may be removed into shelter in the winter time, otherwise the young plants are often hurt by hard frosts; but they will require no more care than only to be placed under a common hot-bed frame, where the glasses may be constantly kept off in mild weather, when they cannot have too much free air, and only covered in hard frosts. These seeds constantly remain in the ground until the second year before they come up, therefore the earth in the pots should not be disturbed; and in the summer time they should be placed in the shade, to prevent the earth from drying too fast; and in very dry weather they should be often watered, but do not give too much water to them at once, which would rot the seeds.

The spring following, when the young plants come up, they must be carefully cleared from weeds, and in dry weather refreshed with water: but should stand, during the summer season, in a place defended from strong winds; and in winter must be placed under frames, where they may be covered in hard frosty weather, but must have open air when the weather is mild. In april following you should transplant them each into a single halfpenny pot filled with fresh light earth, being careful to raise them up with a ball of earth to their roots; and when they are planted, you should water them, to settle the earth to their roots; then place the pots in a warm situation, where they may be defended from sun and wind: but if you will bestow a moderate hot-bed to plunge the pots in, it will greatly promote their taking new root; however, you must carefully defend them from the great heat of the sun, which is injurious to them when fresh removed; but when they have taken root, you may expose them by degrees to the open air. If you suffer the pots to remain plunged all the summer, it will preserve the earth therein from drying so fast as it would do, if they were set upon the ground.

In october you should again remove these plants into shelter, or else plunge their pots into the ground under a warm hedge, where they may be protected from the cold north and east winds; and in the spring following you must shift the plants into pots a size larger, taking away some of the earth from the outside of the ball, and adding some fresh, which will promote their growth; and so continue to manage them as was before directed, until you plant them out in the places where they are designed to remain; which should not be done till they are four or five years old, by which time they will be strong enough to bear the cold of our common winters.

The reason for my directing these plants to be preserved in pots until they are planted out for good is, because they are difficult to transplant, and being tender, will require some shelter while young; and whoever observes the method here laid down, will find the plants so managed to gain two years growth in six, from those raised in the open air, and be in less danger of being destroyed; and as the trouble and expense in raising them this way is not great, it is worth prac-

tising, since in a few years the trees will recompense the trouble.

The timber of this tree is of a reddish colour, and very sweet, and is commonly known in England by the name of Cedar Wood; though there are divers sorts of wood called by that name, which come from very different trees, especially in the West Indies, where there are several trees of vastly different appearances and genera, which have that appellation: it is this wood which is used for pencils, as also to wainscot rooms, and make stair-cases, it enduring longer sound than most other sorts of timber, which, perhaps, may be owing to some extreme bitter taste in the resin, with which the tree abounds; for it is very remarkable, that the worms do not eat the bottoms of the vessels built with this wood, as they do those built with Oak; so that the vessels built with Cedar are much preferable to those built with any other sort of timber, for the use of the West India seas, but it is not fit for ships of war, the wood being so brittle as to split to pieces with a cannon ball.

The Jamaica Juniper being more impatient of cold than the Bermudas, will not live through the winter in the open air in England, and the plants must be preserved in pots and housed in the winter; this is propagated by seeds, in the same way as the Bermudas Cedar; but if the pots are plunged into a moderate hot-bed the second spring after the seeds are sown, it will bring up the plants sooner, and they will have more time to get strength before winter.

All the other sorts being hardy enough to live in the open air, are very well worth propagating, as they add to the variety of Evergreen plantations; some of the sorts rising to a very considerable height, may prove to be useful timber, and may be adapted to such soils as will not suit many other trees.

The common Savin should not be neglected, because it is so very hardy as never to be injured by the severest frost; and as this spreads its branches near the ground, if the plants are placed on the borders of woods, they will have a good effect in winter, by screening the nakedness of the ground from sight.

[The common Savin may be increased by slips, which will grow almost at any time. The upright Savin also may be propagated by slips planted in moist weather in august, and kept shaded and watered in dry weather afterwards. The striped Savin must be increased the same way, from the branches which are most variegated. They may also be raised by berries, when the plants produce any; and by these the most upright and best plants are produced.]

Most of the sorts may be propagated by cuttings, which, if planted in autumn, (or at the end of august) in a shady border, will take root; but those plants which are raised from cuttings will never grow so upright, nor to so large a size as the plants which are raised from seeds; so that when these can be procured, it is much the better method, but the other is frequently practised on those sorts which do not perfect their seeds in England.

As several of these sorts grow to the height of eighteen or twenty feet, the procuring as many of the sorts as can be gotten from the countries of their growth, will be adding to the variety of our Evergreen plantations, which cannot be too much propagated in England, where, in general, our winters are temperate enough for them to thrive to advantage; and as the sorts which are a little more tender than the others obtain strength, they will be in less danger of suffering by severe winters, as we find by many other plants, which were so tender as not to live in the open air at first, but now defy the severest cold of our climate.

JUPICAI. See *Xyris*.

JUPITER'S BEARD. See *Anthyllis*.

JUREPEBA. See *Solanum*.

JUSSIEA. (So named by Linneus, from Antoine de Jussieu, demonstrator of plants in the royal garden at Paris. He edited Tournefort's *Institutes* in 1719, and described plants in the *Paris Memoirs* for 1709, &c.)

Lin. gen. n. 538. Reich. 585. Schreb. 741.

Gartn. t. 31. Juss. 319.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Calycanthemæ*. *Onagrea*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-cleft, superior, small; *leaflets* ovate, acute, permanent.

COR. *Petals* five, roundish, spreading, sessile.

STAM. *Filaments* ten, filiform, very short. *Anthers* roundish.

PIST. *Germ* oblong, inferior. *Style* filiform. *Stigma* headed, flat, marked with five streaks.

PER. *Capsule* oblong, crowned, five-celled, gaping at the corners.

SEEDS very many, disposed in rows.

Obs. *Species exist in which a fifth part of the number is wanting.*

This genus differs from Oenothera in the sessile permanent calyx, having no tube. Hence Oen. octovalvis & hirta, Linn. belong to this genus. Swartz.

ESSENTIAL CHARACTER.

Cal. four or five-parted, superior. Pet. four or five. Caps. four or five-celled, oblong, gaping at the corners. Seeds numerous, minute.

SPECIES.

[1. *Jussieua repens*. *Creeping Jussieua*.

Lin. spec. 555. Reich. 2. 281. fl. zeyl. n. 169. Swartz obs. 172.

Oenothera herbacea repens. Brown. jam. 208. 3.

Nir-Carambu. Rheed. mal. 2. 99. t. 51. Raii hist. 1510.

β. J. adscendens. Lin. mant. 69.

Creeping, flowers five-petalled ten-stamened, leaves ovate-oblong.

2. *Jussieua tenella*.

Lin. syst. 403. Reich. 2. 282. mant. 238. Burm. ind. 103. t. 34. f. 2.

Smooth, flowers five-petalled subsessile, leaves opposite linear-lanceolate.

3. *Jussieua peruviana. Peruvian Jussieua.*

Lin. spec. 555. Reich. 2. 282. Feuill. peruv. 2. 716. t. 9.

Upright, flowers five-petalled, peduncles leafy.]

4. *Jussieua pubescens. Hairy Jussieua.*

Lin. spec. 555. Reich. 2. 282. Loebl. it. 282. n. 205. Sloan. jam. 1. 201. n. 24.

Upright villose, flowers five-petalled ten-stamened sessile.

4. *Jussieua suffruticosa. Shrubby Jussieua.*

Lin. spec. 555. syst. 403. Reich. 2. 282. mant. 381. Gærtn. fruct. 1. 159. Rumph. amb. 6. 49. t. 21. f. 1. Herm. lugdb. 396. (Lyfimachia.)

Upright villose, flowers four-petalled eight-stamened peduncled.

6. *Jussieua erecta. Upright or red-stalked Jussieua.*

Lin. spec. 556. syst. 403. Reich. 2. 282. mant. 381. fl. zeyl. n. 170. hort. ups. 103. Gærtn. fruct. 1. 159. Swartz obs. 173. Thunb. jap. 180. Vahl symb. 1. 31.

Ludwigia capfulis oblongis. Linn. hort. cliff. 491.

Onagra perficæ foliis, &c. Plum. spec. 7. ic. 175. f. 2.

Lyfimachia lutea non papposa erecta, &c. Sloan. jam. 1. 37. t. 11. f. 1.

Jasminum catalanicum, fl. luteo. Seba, thes. 1. 42. t. 26. f. 3.

Upright, smooth, flowers four-petalled eight-stamened sessile.

[7. *Jussieua inclinata*.

Lin. syst. 403. suppl. 235.

Upright smooth, flowers four-petalled eight-stamened peduncled.

8. *Jussieua octovalvis*.

Swartz obs. 142.

Oenothera octovalvis. Lin. spec. 492. syst. 358. Reich.

2. 148. Jacqu. amer. 102. t. 70. pict. 52. t. 105.

Houtt. hist. nat. 8. t. 48. f. 2. Brown. jam. 208.

n. 1. Plum. spec. 7. ic. 275. f. 1. (Onagra.)

Upright, flowers four-petalled eight-stamened peduncled, capsules many-valved, leaves lanceolate.

9. *Jussieua hirta*.

Swartz obs. 142.

Oenothera hirta. Lin. spec. 491. Reich. 2. 149.

Brown. jam. 208. 2. Plum. spec. 7. ic. 174. f. 2. (Onagra.)

Upright hirsute, flowers four-petalled eight-stamened, leaves ovate acuminate rough-haired underneath.]

10. *Jussieua Onagra*.

Mill. dict. n. 4.

Onagra fol. perficariæ amplioribus, parvo flore luteo. Plum. cat. 7.

Upright smooth branching, flowers four-petalled eight-stamened sessile, leaves lanceolate.

11. *Jussieua hirsuta*.

Mill. dict. n. 5.

Onagra erecta, caule rubro hirsuto, foliis oblongis, flore magno luteo. Houtt. M. S. S.

Upright hirsute simple, flowers five-petalled ten-stamened sessile, leaves lanceolate.

DESCRIPTIONS, &c.

These are mostly herbaceous plants, but some are shrubby. Leaves alternate. Flowers solitary, axillary^a.

1. Roots simple, filiform, short. Stem branching, creeping. Branches long, subdivided, divaricating, somewhat succulent, round, smooth. Leaves on short petioles, scattered, small, blunt, spreading, entire, very smooth; with smaller ones in the axils. Peduncles short, one-flowered, round, thickish, smooth. Two very minute scales at the base of the germ. Flowers yellow, small. Calyx five-parted: segments lanceolate, the length of the petals. Petals subsessile, ovate, blunt, veined. Germ attenuated at the base: style thick: stigma convex. Capsule thickish, opening longitudinally. Seeds disposed longitudinally in five rows, angular, compressed.

Native of Jamaica, in moist watery places, flowering in the spring^b. Browne says it is frequent in the low lands about Plain-tain-garden river.

β. The Indian plant, which stands as a distinct species in Linneus's mantissa, has herbaceous ascending, simple, even stems. Leaves petioled, ovate-oblong, even, blunt. Peduncles one-flowered, shorter than the leaf; but those of the fruit the length of the leaf.

2. Stems smooth, with alternate branches. Leaves quite entire.—Native of Java^c.

3. Native of Lima.

4. Stem usually brown, strong, four or five feet high, having several hairy, red, angular branches, thick set on every side with long narrow hairy nerved leaves, several of which come out together, some larger, some smaller: the larger three inches long, and scarcely one broad, light green, downy and soft like velvet. Flowers large, yellow, on peduncles half an inch in length, very open. Capsule large, oblong, with four or five corners, containing much small yellowish seed^d.

Native of Jamaica.] Mr. Miller says, that the seeds were sent him by Dr. Houstoun, and that it rises with a hairy branching stalk two feet high; that it has narrow spear-shaped leaves, placed alternate; that the flowers come out towards the ends of the branches singly from the axils and are sessile; that the petals are pretty large and yellow; that the ten stamens sit upon a long germ, which becomes a capsule crowned by the calyx, and filled with small seeds.

5. This rises with a shrubby stalk near three feet high, and sends out several side branches. Leaves oblong, hairy. The flowers come out from the side of the stalks singly, on short peduncles. Petals yellow. The capsule has a great resemblance to Cloves. It flowers in July and August, and the seeds ripen in October.

[Linneus sets it down as a native of India. Mr. Miller says it grows naturally at Campeachy, whence the seeds were sent him by Mr. Robert Millar.

[In Linneus's mantissa it is said that the stem is lofty, and alternately branched; the leaves lanceolate, scarcely petioled, pubescent as is the whole plant; the capsules a little shorter than the leaves, two inches long, striated, subsessile: according to Gærtner, four-cornered, with prominent nerves along the middle, and striated along the edges of the valves. Receptacle four-cornered-cruciate, columnar. Seeds very numerous, ovate-globular, slightly grooved on each side, ferru-

^a Jussieu.

^b Swartz.

^c Burm.

^d Sloane.

ginous, smooth, lucid, divided by a partition within. A bilocular seed in a capsular fruit is unusual.

Gärtner remarks here that *Ludwigia* indeed differs sufficiently from this genus in the fabric and situation of the receptacle of the seeds, but that the distinction between *Jussieua* and *Oenothera* is merely factitious and imaginary.

6. Root annual. Stem from two to four feet high, herbaceous, very much branched, four-cornered, smooth, reddish. Branches filiform, quadrangular, erect, subdivided, pubescent. Leaves petioled, linear-lanceolate, entire, acuminate, nerved, smooth. Petioles very short, red. Flowers abundant, yellow, small. Calyx four-leaved; leaflets ovate-lanceolate, acuminate, spreading, striated underneath, smooth. Petals four, distant, ovate, entire, concave, deciduous. Filaments eight, shorter than the petals, upright, contiguous to the pistil. Anthers very minute, whitish, commonly glued to the stigma. Germ quadrangular, reddish, smooth. Style very short, round and thick. Stigma spherical. Capsule elongated, quadrangular, retuse, four-celled, four-valved. Seeds very minute, roundish, ferruginous*.—Gärtner adds, that the capsule is slightly narrowed upwards and smooth; the partitions cohering with the angles of the receptacle and very narrow: the receptacle columnar, deeply four-grooved, with the angles compressed and corresponding with the partition: the seeds ovate, smooth and yellowish. According to Thunberg, though the perianth is commonly four-parted, yet it is sometimes five-parted.

It is a vernal marsh plant, native of Jamaica, and others of the West India islands, as well as of the Continent.—Mr. Miller cultivated it in 1739^f.

Thunberg found it in Japan, and also in Java and Ceylon; but in these latter places always with narrower leaves and subpeduncled flowers, whereas this plant has usually leaves a quarter of an inch broad and sessile flowers.

7. This is an annual plant, upright and wholly smooth. Stem simple, round, thick, porous, watery, rooting at the lower joints. Leaves obovate, blunt, petioled, scarcely longer than the petioles, ribbed, smooth. Peduncles one-flowered, a little longer than the petiole. Germ a little shorter than the peduncle, even, thickened, four-cornered, acute-angled. Petals four, ovate, larger, veined, very tender.

Native of Surinam, in marshes. Found there by C. G. Dalberg^g.

8. Branches almost upright, four-cornered, pubescent. Leaves acuminate, entire, dotted underneath at the edge, nerved, pubescent; on short petioles. Leaflets in the axils ovate, minute. Flowers on short peduncles, large, yellow. Calyx sessile, four-leaved: leaflets ovate-acuminate, pubescent. Petals four, three times as large as the calycine leaflets, distant, ovate or obovate, blunt, spreading, deciduous. Filaments eight, pressed close to the style up to the middle, the length of the pistil, awl-shaped. Anthers ovate, incumbent, two-valved. Germ roundish-quadrangular, attenuated at the base, a little curved. Style thick. Stigma spherical. Capsule pedicelled, long, acuminate at the base, retuse, four-celled, four or eight-valved. Seeds very many, roundish. Receptacle quadrangular.

Native of South America and the West Indies, in marshy watery places^h.

9. This is a shrubby plant, with a hispid stem. Branches hispid, alternate. Leaves sessile, marked with parallel veins. Flowers large, sessile, contained in a large, hispid, four-leaved calyxⁱ.

Native of South America and Jamaica.]

10. This has a branching smooth stalk near three feet high, with leaves on short foot-stalks. Flowers small and yellow.

It was sent to Mr. Miller from Carthage, by Dr. Houstoun.

11. This rises with single, upright, red stalks three feet high, hairy and channelled. The leaves stand nearer together than in any of the other sorts. Flowers

axillary, towards the top of the stalk, composed of five large yellow petals. Capsules an inch long.

Sent from La Vera Cruz by Dr. Houstoun. [His specimen is in Sir Joseph Banks's herbarium, and it is there named *Jussieua elliptica*.]

PROPAGATION AND CULTURE.

All these sorts are propagated by seeds, which should be sown early in the spring, in pots filled with a soft loamy soil, and plunged into a moderate hot-bed; but as these seeds often lie a whole year in the ground before they vegetate, the earth must be kept moist, and the glasses of the hot-bed shaded in the heat of the day, by this method the seeds may be brought soon to vegetate; when the plants come up, and are fit to remove, they should be each planted into a small separate pot, filled with light loamy earth, and plunged into a hot-bed of tanners bark, where they should be shaded from the sun till they have taken new root; after which they should have free air admitted to them every day, in proportion to the warmth of the season; they must also be frequently refreshed with water, but it must not be given to them in too great plenty: when the roots of the plants have filled these small pots, the plants should be removed into others a size larger; and if the plants are too tall to stand under the frames of the hot-bed, they should be removed into the bark-stove, where they may remain to flower and perfect their seeds; for when the plants rise early in the spring, and are brought forward in hot-beds, all the sorts will flower and perfect their seeds the same year, which is better than to have them to keep through the winter.

[*JUSSIEUA*. See *Jatropha*.]

JUSTICIA. (So named by Houstoun from James Justice, Esq. F. R. S. one of the principal Clerks of Session in Scotland, author of the *British Gardener's Director*, 1764.)

Lin. gen. n. 27. Reich. 28. Schreb. 35. Houst. reliqu. 1. Gärtn. t. 54. Juss. 104. Adhatoda. Tournef. t. 79.

Class. 2. 1. Diandria Monogynia.

Nat. order of *Personatae*. *Acanthi*, Juss.

GENERIC CHARACTER:

CAL. *Perianth* one-leaved, very small, five-parted, acute, upright, narrow.

COR. one-petalled, ringent. *Tube* gibbous; *Border* two-lipped: *Lip superior* oblong, emarginate. *Lip inferior* of the same length, reflex, trid.

STAM. *Filaments* two, awl-shaped, hid under the upper lip. *Anthers* upright, bifid at the base.

PIST. *Germ* top-shaped. *Style* filiform, length and situation of the stamens. *Stigma* simple.

PER. *Capsule* oblong, obtuse, narrowed at the base, two-celled, two-valved; the partition opposite to the valves, gaping with an elastic claw.

SEEDS roundish.

OBS. *The upper lip of the corolla differs in point of situation.*

Some species recede so much from this character as to seem of a distinct genus.

cf. Mant. p. 172. R.

ESSENTIAL CHARACTER.

COR. ringent. CAPS. two-celled, opening with an elastic claw. STAM. with a single anther.

SPECIES.

* *With a double calyx.*

[1. *Justicia fastuosa*. *Superb Justicia*.

Lin. syst. 62. Reich. 1. 41. mant. 172. Vahl symb. 1. 2. t. 1. & 2. 13.

Shrubby, leaves lanceolate-elliptic, flowers in terminating thyrses, calyxes two-flowered.

2. *Justicia Forskahlei*.

Vahl symb. 1. 2. Forsk. descr. 4. n. 9. Lin. mant. 173.

Shrubby, leaves ovate acuminate, flowers in axillary and terminating thyrses, calyxes one-flowered.

3. *Justicia purpurea*.

Lin. spec. 23. syst. 63. Reich. 1. 45. Obs. it. 230. Vahl symb. 2. 13. Gärtn. fruct. 1. 255. Lour. coccinch. 25.

Herbaceous, branches pubescent, flowers in axillary and terminating spikes, bractes lanceolate smooth.

4. *Justicia*

* Swartz. ^f Hort. kew. ^g Linn. suppl.

^h Swartz. ⁱ Plumier.

4. *Justicia verticillaris*.
Lin. syst. 62. *suppl.* 85. *Vahl symb.* 2. 13.
Villose, leaves ovate, flowers axillary in whorls, outer calyxes awnless.
5. *Justicia aristata*.
Vahl symb. 2. 2.
Villose, leaves ovate, flowers axillary in whorls subsessile, outer calyxes awned.
6. *Justicia chinensis*.
Lin. spec. 22. *Reich.* 1. 44. *Vahl symb.* 1. 4.
Lour. cochinch. 25. *Burm. ind.* 8. t. 4. f. 1.
J. sexangularis. Forsk. descr. 5. n. 13.
Herbaceous, leaves ovate, peduncles axillary in whorls trifid, bractes ovate mucronate coloured at the base.
7. *Justicia triflora*.
Vahl symb. 1. 3. *Forsk. descr.* 4. n. 10.
Herbaceous, leaves ovate, peduncles axillary elongated subtriflorous, bractes linear-lanceolate.
8. *Justicia serpens*.
Vahl symb. 2. 2.
Herbaceous creeping, leaves oblong smooth, flowers axillary solitary.
9. *Justicia fulcata*.
Vahl symb. 2. 13.
Dianthera fulcata. Vahl symb. 1. 4. *Diët.* n. 8.
Herbaceous, leaves ovate-cordate, spikes terminating, flowers in whorls.
10. *Justicia bicalyculata*.
Vahl symb. 2. 13.
J. ligulata. Cavan. bisp. 52. n. 79. t. 71. *Lamarck encycl.* n. 37.
Dianthera bicalyculata. Retz. in act. holm. 1775. p. 297. t. 9. *Vahl symb.* 1. 6. *Diët.* n. 12.
D. malabarica. Lin. syst. 63. *suppl.* 85. *Gært. fruct.* 1. 240.
Leaves ovate-acuminate, flowers in axillary dichotomous panicles, outer bracte linear double the length of the other, anthers binate.
11. *Justicia bivalvis*.
Lin. spec. 23. *syst.* 63. *Reich.* 1. 45. *Vahl symb.* 1. 3.
J. foetida. Forsk. descr. 5. n. 12.
Folium tinctorum. Rumph. amb. 6. 51. t. 22. f. 1.
Shrubby, leaves ovate-lanceolate, peduncles axillary trifid, lateral pedicels two-flowered, bractes ovate awned nerved.]
- ** With a single calyx.
- Corollas two-lipped; lips undivided.
12. *Justicia sexangularis*. Chickweed-leaved *Justicia*.
Lin. spec. 23. *Reich.* 2. 44. *hort. cliff.* 10. n. 3.
Vahl. 2. 13.
Herbaceous, leaves ovate, peduncles three-flowered, bractes wedge-shaped, anthers parallel.
13. *Justicia scorpioides*.
Lin. spec. 21. *Reich.* 1. 41. *Vahl symb.* 2. 3.
Reliqu. Houst. t. 1.
Shrubby, branches round, leaves lanceolate-ovate hirsute sessile, spikes axillary recurved, bractes minute, anthers parallel.
- [14. *Justicia affurgens*.
Lin. spec. 23. *Reich.* 1. 45. *amoen.* 5. 391. *Swartz obs.* 13. *Brown. jam.* 118. t. 2. f. 1. *Sloan. jam.* 1. 159.
Herbaceous, branches angular, leaves ovate-elliptic, spikes axillary and terminating branched, flowers alternate, bractes linear, anthers parallel.
- *** Corollas two-lipped; lower lip divided.
15. *Justicia acaulis*.
Lin. syst. 62. *suppl.* 84. *Vahl symb.* 2. 3. / *Retz. obs.* 4. 7.
Stemless, leaves crenate, veins villose underneath.]
16. *Justicia Ecbolium*. Long-spiked *Justicia*.
Lin. spec. 20. *syst.* 61. *Reich.* 1. 40. *fl. zeyl.* n. 17.
Fabric. helmst. 217. *Vahl symb.* 1. 2. *Lour. cochinch.* 23.
J. viridis. Forsk. descr. 5. n. 14.
Adhatoda spica longissima, flore reflexo. Burm. zeyl. 7. t. 4. f. 1.
Carim-curini. Rheed. mal. 2. 31. t. 20. *Pluk. phyt.* t. 171. f. 4.

- Shrubby, spikes terminating four-cornered, bractes ovate imbricate ciliate mucronate, upper lip linear reflex, anthers parallel.*
- [17. *Justicia pulcherrima*.
Lin. syst. 61. *suppl.* 84. *Jacqu. amer.* 6. t. 2. f. 4. *piët.* 9. t. 259. f. 1. *Vahl symb.* 2. 14.
Shrubby, spikes axillary and terminating, bractes ovate imbricate ciliate awnless, upper lip lanceolate straight.
18. *Justicia carthaginensis*.
Lin. spec. 1663. *syst.* 63. *Reich.* 1. 45. *Vahl symb.* 2. 14. *Jacqu. amer.* 5. t. 5. *piët.* 8. t. 7.
Herbaceous, leaves elliptical, spikes axillary and terminating, bractes imbricate all wedge-shaped, ciliate, upper lip emarginate, anthers binate.
19. *Justicia tetragona*.
Vahl symb. 3. 5.
Shrubby, leaves crenate smooth, spikes terminating four-cornered, bractes ovate imbricate in four rows keeled ciliate.
20. *Justicia coccinea*. Scarlet-flowered *Justicia*.
Vahl symb. 3. 6. *Aubl. guian.* 10. t. 3. *Ait. hort. kew.* 1. 26. *Smith ic. rar.* 8.
Shrubby, leaves and bractes elliptical acuminate, upper lip undivided, anthers parallel.
21. *Justicia hirsuta*.
Vahl symb. 2. 3.
Herbaceous, leaves toothed, spikes axillary and terminating four-cornered, bractes ovate imbricate hirsute.
22. *Justicia sphærosperma*.
Vahl symb. 2. 3.
Herbaceous, spikes axillary opposite in pairs on each side, bractes linear elongated, seeds globular shining.
23. *Justicia Gandarussa*.
Lin. syst. 62. *suppl.* 85. *Vahl symb.* 2. 4.
Shrubby, leaves lanceolate elongated, spikes terminating leafy, flowers in whorls, bractes minute, upper lip undivided, anthers binate.
24. *Justicia procumbens*.
Lin. spec. 22. *Reich.* 1. 43. *fl. zeyl.* n. 19. *Vahl symb.* 2. 14. *Burm. ind.* 8. *Pluk. phyt.* t. 56. f. 3. & t. 392. f. 4.
Herbaceous, stem procumbent, leaves lanceolate quite entire, spikes axillary and terminating, calyxes four-cleft.
25. *Justicia echioides*.
Lin. spec. 22. *Reich.* 1. 44. *fl. zeyl.* n. 21. *Vahl symb.* 2. 14. *Herm. lugdb.* t. 669. (*Euphrasiae affinis.*)
Herbaceous, leaves lanceolate-linear rough-haired, spikes axillary opposite pointing one way ascending, anthers parallel bearded at the base.
26. *Justicia longifolia*.
Vahl symb. 2. 4.
Herbaceous, leaves lanceolate elongated, spikes axillary in pairs opposite pointing one way.
27. *Justicia latifolia*.
Vahl symb. 2. 4.
Shrubby, leaves ovate acuminate, spikes terminating somewhat branched, lower flowers in whorls.
28. *Justicia picta*.
Lin. spec. 21. *syst.* 62. *Reich.* 1. 41. *Vahl symb.* 2. 14. *Rumph. amb.* 4. 73. t. 30. *Rheed. mal.* 6. 111. t. 60. *Lour. cochinch.* 24.
Shrubby, leaves ovate painted, spikes axillary and terminating, flowers in whorls, upper lip bifid, anthers parallel.
29. *Justicia nitida*.
Vahl symb. 2. 5. *Swartz prodr.* 13. *Jacqu. amer.* 5.
Shrubby, leaves elliptic acuminate, racemes spike-form whorled, bractes minute, pedicels and calyxes smooth, anthers parallel.
30. *Justicia stricta*.
Vahl symb. 2. 6.
Herbaceous, leaves lanceolate-elliptic, racemes axillary two-parted pointing one way, filaments smooth.
31. *Justicia paniculata*.
Vahl symb. 2. 5. *Burm. ind.* 9. *Rheed. mal.* 9. 109. t. 56.
Herbaceous, leaves lanceolate, panicles axillary and terminating dichotomous, flowers pointing one way, filaments hirsute, capsules compressed.
32. *Justicia*

32. *Justicia nutans*.
Vahl symb. 2. 6. *Burm. ind.* 10. t. 5. f. 1.
 Herbaceous, leaves toothed racemes terminating nodding at top, flowers inverted.
33. *Justicia nasuta*.
Lin. spec. 23. *syst.* 63. *Reich.* 1. 45. *Vahl symb.* 2. 15. *Curt. magaz.* 325. *Rheed. mal.* 9. 135. t. 69.
 Suffruticose, leaves elliptic quite entire, peduncles axillary dichotomous, upper lip upright bifid, anthers divaricating.
34. *Justicia scandens*.
Vahl symb. 2. 7.
 Shrubby, leaves ovate acuminate subrepand, branches villose, peduncles axillary trichotomous divaricating.
35. *Justicia ciliaris*. *Ciliated Justicia*.
Lin. syst. 62. *suppl.* 84. *Jacqu. hort.* 2. t. 104. *Ait. hort. kew.* 1. 27.
 Herbaceous, leaves lanceolate bluntish, flowers axillary opposite, anthers parallel appendicled.
36. *Justicia fecunda*.
Vahl symb. 2. 7.
 Herbaceous, leaves ovate-lanceolate acuminate, racemes terminating compound, racemelets pointing one way, anthers binate.
37. *Justicia debilis*.
Vahl symb. 2. 15.
Dianthera debilis. *Vahl symb.* 1. 5. *Forsk. descr.* 9. n. 23. *Diët. n.* 10.
 Shrubby, spikes axillary and terminating, bractes ovate imbricate ciliate, anthers binate.
38. *Justicia violacea*.
Vahl symb. 2. 15.
Dianthera violacea. *Vahl symb.* 1. 6. *Diët. n.* 11.
 Shrubby, leaves lanceolate, spikes terminating, bractes lanceolate imbricate, ciliate, anthers binate.
39. *Justicia Rohrii*.
Vahl symb. 3. 6.
 Herbaceous, leaves elliptic quite entire, spikes terminating compound imbricate pubescent, bractes ovate, anthers binate.
40. *Justicia polystachya*.
Vahl symb. 2. 7. t. 26.
 Herbaceous, leaves lanceolate-ovate, spikes axillary opposite pointing one way, bractes ovate hirsute, anthers binate.
41. *Justicia retusa*.
Vahl symb. 2. 8.
 Herbaceous, leaves ovate acuminate, spikes terminating, bractes obovate subretuse imbricate, anthers binate.
42. *Justicia flava*.
Vahl symb. 2. 15.
Dianthera flava. *Vahl symb.* 1. 5. *Forsk. descr.* 9. n. 24. *Diët. n.* 9.
 Shrubby, leaves lanceolate-oblong, spikes terminating, flowers in pairs, bractes lanceolate blunt.
43. *Justicia americana*.
Vahl symb. 2. 15.]
Dianthera americana. *Lin. spec.* 24. *Reich.* 1. 46. *Gron. virg.* 6. 5. *Diët. n.* 1.
 Herbaceous, leaves linear-lanceolate, spikes axillary solitary like corymbs, peduncles filiform alternate the length of the leaves, anthers binate.
- [44. *Justicia punctata*.
Vahl symb. 2. 15.
Dianthera punctata. *Vahl symb.* 1. 4. *Diët. n.* 7.
D. americana β. *Forsk. descr.* 9. n. 25.
 Herbaceous, leaves lanceolate-ovate, spikes terminating, flowers remote in a sort of whorl, bractes lanceolate acuminate.
45. *Justicia eustachiana*.
Vahl symb. 2. 15. *Houtt. hist. nat.* 3. 46. t. 18. f. 2.
Dianthera eustachiana. *Lin. syst.* 64. *Jacqu. amer.* 4. t. 4. *piët.* 8. t. 5.
 Shrubby, leaves oblong acuminate, spikes axillary and terminating, flowers in remote whorls two or three together, solitary at top, bractes wedge-shaped.
46. *Justicia pectoralis*.
Vahl symb. 2. 15. *Swartz prodr.* 13. *obs.* 14.
Dianthera pectoralis. *Lin. syst.* 64. *Jacqu. amer.* 3. t. 3. *piët.* 8. t. 4. *Brown. jam.* 118. n. 3.

- Herbaceous, leaves lanceolate petioled, spikes panicled, bractes minute, upper lip undivided, anthers binate.
47. *Justicia comata*.
Vahl symb. 2. 15. *Swartz obs.* 14.
Dianthera comata. *Lin. syst.* 63. *Diët. n.* 2.
 Herbaceous, leaves linear-lanceolate subsessile, spikes subumbelled-whorled, bractes minute, anthers binate.
48. *Justicia undulata*.
Vahl symb. 2. 8.
Dianthera hyssopifolia. *Burm. ind.* 11. t. 5. f. 2.
 Herbaceous, leaves lanceolate waved, peduncles terminating umbelled simple and trifid, anthers binate.
49. *Justicia frondosa*.
Vahl symb. 2. 8.
 Herbaceous, umbels axillary peduncled compound, peduncles elongated, bractes obovate rhombed smooth, blunt, anthers binate.
50. *Justicia pubescens*.
Vahl symb. 2. 9.
 Shrubby, peduncles axillary opposite four-flowered pedicelled, bractes ovate-roundish mucronate pubescent, anthers binate.
51. *Justicia laevigata*.
Vahl symb. 2. 9.
 Shrubby, peduncles axillary opposite, three-flowered pedicelled, bractes oblong mucronate pubescent, anthers binate.
52. *Justicia cuspidata*.
Vahl symb. 2. 9.
Dianthera verticillata. *Forsk. descr.* 9.
 Peduncles axillary in whorls subtriflorous pedicelled, bractes wedge-form awned, anthers binate.
53. *Justicia biflora*.
Vahl symb. 2. 9.
 Suffruticose, peduncles axillary two-flowered pedicelled equalling the leaves, bractes awl-shaped, anthers binate.
54. *Justicia sessilis*.
Lin. spec. 1663. *syst.* 62. *Jacqu. amer.* 3. t. 2. f. 2. *piët.* 8. t. 3.
 Shrubby, leaves ovate-acute subserrate, flowers axillary solitary sessile, upper lip quite entire.
55. *Justicia nigricans*.
Lour. cochinch. 24.
 Shrubby, leaves lanceolate-linear blunt blackish, spikes distich terminating.
56. *Justicia tinctoria*.
Lour. cochinch. 25.
 Herbaceous, leaves lanceolate subcrenate pubescent, flowers axillary heaped.]
- **** Corollas ringent.
57. *Justicia Adhatoda*. *Malabar Nut*.
Lin. spec. 20. *syst.* 61. *Reich.* 1. 40. *fl. zeyl.* n. 16. *hort. ups.* 7. *cliff.* 9. *Vahl symb.* 2. 16. *Sabb. hort. rom.* 3. t. 10. *Fabric. helmst.* 215.
Adhatoda zeylanensis. *Herm. lugdb.* t. 643. *Pluk. phyt.* t. 173. f. 3.
Ecbolium. *Riv. mon.* 88.
 Arboreous, leaves ovate-lanceolate acuminate, spikes axillary opposite, bractes ovate-elliptic leafy, anthers parallel.
- [58. *Justicia Betonica*.
Lin. spec. 21. *syst.* 62. *Reich.* 1. 40. *fl. zeyl.* n. 18. *Burm. ind.* 8.
Betonica frutescens. *Bont. jav.* 146?
Bem-curini. *Rheed. mal.* 2. 33. t. 21. *Raii hist.* 1709.
 Shrubby, leaves elliptic, spikes terminating elongated, bractes ovate-acuminate membranaceous netted coloured, anthers binate appendicled.
59. *Justicia repens*.
Lin. spec. 22. *syst.* 63. *Reich.* 1. 44. *fl. zeyl.* n. 20. *Herm. zeyl.* 21.
 Herbaceous, leaves elliptic subsessile, spikes axillary and terminating pointing one way smooth, bractes ovate membranaceous at the edge, anthers binate appendicled.
60. *Justicia pectinata*.
Lin. spec. 22. *syst.* 63. *Reich.* 1. 44. *amoen.* 4. 299. *Vahl symb.* 2. 16.
J. parviflora. *Retz. obs.* 5. 9. n. 4.
 Herbaceous, leaves oblong, spikes axillary pointing one way tomentose, bractes half-lanceolate distich.

61. *Justicia sanguinolenta*.
Vahl symb. 2. 10.
Herbaceous, stem creeping; leaves oblong, peduncles axillary solitary one-flowered.
62. *Justicia japonica*.
Vahl symb. 2. 16.
Dianthera japonica: Thunb. jap. 21. Lin. syst. 64. Diēt. n. 3.
Herbaceous, leaves ovate-oblong acuminate, peduncles axillary alternate four or five-flowered pedicelled, bractes lanceolate ciliate.
63. *Justicia trifulca*.
Vahl symb. 2. 10.
Dianthera trifulca. Forsk. descr. 7.
Shrubby, leaves oblong blunt, peduncles axillary subtriflorous opposite, flowers sessile, anthers binate.]
64. *Justicia hyssopifolia*. Snap-tree.
Lin. spec. 21. syst. 62. Reich. 1. 43. hort. cliff. 10. Mill. fig. t. 13. Fabric. helmst. 218. Houtt. bist. nat. 4. t. 18. f. 3. Pluk. phyt. t. 280. f. 1.
Shrubby, leaves lanceolate blunt, peduncles axillary one or two-flowered, bractes shorter than the calyx, calycine segments oblong, anthers binate appendicled.
- [65. *Justicia orchioides*.
Lin. syst. 62. suppl. 85. Ait. hort. kew. 1. 28.
Shrubby, leaves lanceolate sessile, peduncles axillary solitary one-flowered, bractes shorter than the calyx, anthers binate appendicled.
66. *Justicia madurensis*.
Vahl symb. 2. 17. Burm. ind. 9. t. 4. f. 3.
Shrubby, leaves oblong toothed, peduncles axillary one-flowered.
67. *Justicia cuneata*.
Vahl symb. 2. 10.
Shrubby, leaves obovate emarginate, flowers axillary solitary sessile, anthers binate.
68. *Justicia tranquebarensis*.
Lin. syst. 62. suppl. 85. Vahl symb. 2. 17.
J. parvifolia. Lamarck.
Suffrutescent, leaves obovate on hoary branches, flowers axillary solitary sessile, bractes remote obcordate, anthers binate appendicled.
69. *Justicia odora*.
Vahl symb. 2. 11.
Dianthera odora. Forsk. descr. 8.
Shrubby, branches smooth, leaves roundish, flowers axillary solitary sessile opposite.
- ***** Corollas almost equal.
70. *Justicia infundibuliformis*.
Lin. spec. 21. syst. 62. Reich. 1. 41. Houtt. bist. nat. 4. t. 18. f. 1.
Shrubby, leaves lanceolate-ovate in fours, spikes terminating.
71. *Justicia sinuata*.
Vahl symb. 2. 11.
J. longifolia. Forst. flor. austral. 4. n. 13.
Shrubby, leaves linear-oblong sinuate-pinnatifid, peduncles axillary trifid, corollas salver-shaped, anthers parallel.]
72. *Justicia spinosa*.
Lin. spec. 1663. syst. 62. Reich. 1. 41. Jacq. amer. 2. t. 2. f. 1. pict. 7. t. 2. Vahl symb. 2. 17.
Shrubby, leaves ovate or obovate, spines axillary, lateral peduncles simple, corollas salver-shaped, anthers parallel.
- [73. *Justicia repanda*.
Forst. flor. austral. 3. n. 12.
Shrubby, leaves elliptic repand, peduncle axillary trifid, corollas salver-shaped, anthers parallel.
74. *Justicia armata*.
Swartz prodr. 13.
Shrubby, prickly, leaves oblong emarginate coriaceous shining.
75. *Justicia acicularis*.
Swartz prodr. 13.
Shrubby, diffused, spiny, spines bristle-shaped, flowers peduncled axillary solitary.
76. *Justicia reptans*.
Swartz prodr. 13.
Stem herbaceous creeping, leaves blunt, spike terminating undivided.

77. *Justicia humifusa*.
Swartz prodr. 14.
Stem herbaceous decumbent, leaves ovate and cordate, spikes umbelled.
78. *Justicia nemorosa*.
Swartz prodr. 14.
Stem herbaceous four-cornered somewhat upright, leaves ovate-lanceolate, spikes ovate.]
79. *Justicia fruticosa*.
Mill. diēt. n. 3.
J. frutescens & *hirsuta*, foliis oblongis pediculis longissimis, flore rubro. Houtt. M. S. S.
Shrubby, leaves ovate or ovate-lanceolate hirsute petioled, bractes cordate-acuminate.
80. *Justicia arborea*.
Mill. diēt. n. 7.
Adhatoda arborea, foliis oblongis subtus villosis, floribus spicatis albis. Houtt.
Arboreous, leaves lanceolate-ovate sessile tomentose underneath, flowers in clustered terminating spikes.

DESCRIPTIONS, &c.

[This genus is divided by Linneus into shrubby and herbaceous, but the known species are become so numerous, and the duration of the stem is so uncertain or difficult to ascertain in plants of India cultivated in our stoves, or in specimens sent from hot countries, that Vahl has substituted other circumstances of subdivision taken from the calyx and corolla, as adopted above.

It appears from late observations of Jacquin, Justieu, Vahl, &c. that the two anthers on each filament are not a sufficient generic distinction; for in some species of *Dianthera* the filaments are divided into two segments, each of which has an anther; but in others the filaments are undivided, and have two anthers indeed but so approximated as almost to coalesce into one. But not only *Diantheras* properly so called have two anthers, but most of the *Justicias*, if not all, are really *Diantheras*; for not only several of Linneus's *Justicias* have two anthers quite distinct, as *J. hyssopifolia*, *orchioides*, &c. but the rest have generally twin or double anthers, with this difference, that being parallel to each other they seem to be but one, although they are really two.

If this natural genus, consisting of *Justicia* and *Dianthera*, is to be separated, Vahl recommends it to be grounded on the capsule rather than the anthers^a.

The species in the first section might very well form a distinct genus, and accordingly were considered as such by the late Dr. Solander. Some of them rather belong to the class *Didynamia* and the genus *Ruellia*, as *J. pulcherrima*, *infundibuliformis*, *gangetica*, &c.

Some of the species (n. 9, 10, 31, 37, 38, 42, 43, 44, 47, 62.) are repeated from our article *DIANTHERA*, because they more properly belong to this place.

1. Stem round, smooth and even. Leaves opposite, petioled, quite entire, with alternate veins, hairy underneath and round the edge. Flowers very abundant, clustered in axillary racemes, not longer than the leaves. Calyx even, the size of a grain of wheat, receding in this and other parts of the flower so much as to warrant the making this plant of a genus separate from *Justicia*^b.

This is sufficiently distinct from the next species in its elliptic leaves narrowing to both ends, emarginate at top, usually smooth; in its compound elongated terminating raceme; in its flowers pointing one way, with roundish mucronate floral leaves; and in the four-parted outer calyxes inclosing two flowers^c.

Native of Arabia Felix and the island of St. Johanna.

2. Branches at bottom obscurely angular, purplish, very smooth, jointed: joints three inches long, marked with four lines. Leaves remote, spreading very much, quite entire, hairy on the veins beneath and about the edge, two inches long. Petiole hairy, half an inch in length. Peduncles axillary, solitary, very short, opposite, sometimes single, but more frequently bearing three subsessile spikes at top. Spikes upright, an inch

^a Symb. 2. 11, 12.^b Linn. mant.^c Vahl.

in length. Flowers clustered, imbricate. There is an ovate petioled acute deciduous floral leaf at the base of each calyx. Bracte solitary, linear. Scales three minute, membranaceous at the base of the inner calyx as in the preceding.—Native of Arabia Felix^d.

3. Stem rooting, brachiate. Leaves broad-ovate, mucronate at top and bottom, smooth, petioled; quite entire. Spikes on the sides and at the tops of the branches, pointing one way. Bractes narrow, the length of the capsules. Corollas purple; lips upright, one linear and very narrow; the other wide and three-lobed. Stamens purple, the length of the corolla^e.

Stem upright, branching, jointed, three feet high. Leaves opposite, ciliate about the edge. Lower lip of the corolla turbinate-oblong, very blunt. Anthers oblong^f.

Capsule small, ovate-lanceolate, elongated into the peduncle transversely compressed, opening elastically from the peduncle. Partition bifid. Receptacle none; but the seeds sessile in the axils of the claws. Seed single in each cell, ovate, slightly emarginate at the umbilicus, compressed a little, rugged all over with sharp granules, of a dirty brownish red colour^g.

Found near Canton in China by Osbeck, and since by Loureiro.

4. Discovered at the Cape of Good Hope by Thunberg.

5. Branches woody, angular at top, with an excavated line running down the sides of the joints. Leaves an inch long, quite entire, acute, villose especially underneath, on short petioles. Flowers eight or ten on each side, on two or three very short peduncles. Bractes of the peduncles two on each side, lateral, oval, narrowed at the base, semiunguicular: floral bractes linear. Outer calyx four-parted; segments linear-awl-shaped, the two outer longer. Inner calyx five-parted; segments unequal, awl-shaped. Corolla villose; tube the length of the outer calyx: upper lip erect, lanceolate, entire; lower trifid, with oblong segments. Stamens and style the length of the corolla.

Native of the Cape of Good Hope^h.

6. Stems procumbent, hexangular, a foot long, branched at bottom. Leaves opposite, petioled, acuminate, bluntish, scarcely crenate, or quite entire, smooth. Peduncles sometimes solitary, three or four-flowered at top, short. Involucels two, bristle-shaped, naked under each flower. Bractes oblong, mucronate, narrowed at the base. Outer calyx four-leaved; leaflets lanceolate: inner five-leaved. Corolla pale violet; tube long, slender; border ringent, upper lip roundish, lower oblong.—Native of Chinaⁱ.

7. Branches villose, with joints four inches long, four-grooved. Leaves remote, quite entire, sometimes obscurely toothletted towards the base, hairy, an inch long: petiole twice the length of the leaf. Peduncles solitary, sometimes opposite, twice or three times the length of the leaf, hairy, three or four-flowered at the top. Involucre of two petioled linear-lanceolate blunt leaflets shorter than the flower. Bractes two, longer than the calyx, unequal, blunt. Outer calyx five-leaved; leaflets linear, unequal: inner many-leaved; leaflets awl-shaped, shorter^k.—Native of Arabia Felix.

8. Stem filiform, having a short branchlet or two at the joints, smooth. Leaves unguicular, often smaller, spreading very much, oblong sometimes subovate, quite entire, blunt, veined, on petioles the length of the leaves. Flowers sessile, alternate below, opposite above. Outer calyx semiunguicular, five-cleft; segments linear-lanceolate, the uppermost longer and broader: inner short, five-parted; segments awl-shaped. It varies with rounder leaves.—Native of the island of Mauritius^l.

9. See *Dianthera fulcata*.

10. Stem shrubby, angular, rough-haired. Leaves opposite, petioled, quite entire. Panicles terminating, on trifid or bifid pedicels. Outer calyx five-cleft, the dorsal segment lanceolate, almost the length of the

corolla. Flowers purple^m. Capsule oblong, compressed a little, acuminate at top, elongated below into a linear-compressed claw, by which it opens elastically. Seeds two in each cell, orbiculate, emarginate-beaked at the umbilicus, flattish on both sides, black-brown, rugged with extremely minute headed pricklesⁿ. Native of the East Indies, where it was observed by Koenig.

11. Branches scarcely angular below, smooth, jointed: internodes two or three inches long, thicker at top and bottom. Leaves obscurely crenate towards the base, with few very short hairs, pressed close, two inches long, the upper ones lanceolate, cusped. Petiole one-fourth of the length of the leaf. Peduncles solitary, opposite, on the branchlets alternate, half the length of the petioles, upright, having two or three pedicels at top longer than the peduncle, and two bristle-shaped leaflets the length of the pedicels. Flowers covered with two quite entire mucronate veined three-nerved unequal unguicular bractes; the side-ones two-flowered, the middle one-flowered. Both calyxes equal in length, five-parted; segments lanceolate, villose. Capsule villose.

From Rumphius's description, and from his figure, t. 22. f. 2. it is plain, that his Bungum belongs to *J. purpurea*, and *Folium tinctorium* to this. The synonym of *Hortus Malabaricus* is doubtful.

Native of the East Indies and Arabia Felix^o.]

12. This is an annual plant, with an upright stalk, having six angles, rising two or three feet high, and dividing into many branches. Leaves opposite, an inch and half long, and one inch broad; smooth, as are also the stalks. At each joint come out clusters of small bractes. Long before the stalks decay most of the leaves fall off, leaving only these bractes. Flowers in small spikes at the side of the branches, sitting very close; they are of a beautiful carmine colour. The upper lip is arched, bending over the lower, which is also a little reflexed; both are entire. Capsules short, wedge-shaped, opening lengthwise, inclosing two small oval seeds.

Native of La Vera Cruz and Jamaica. Cultivated before 1733, by Mr. Miller; whose specimen is in Sir Joseph Banks's herbarium.

13. Stem brittle, five or six feet high, sending out many branches. Leaves two inches long; and one inch broad, hairy, opposite. Flowers large, of a carmine colour, and ranged on one side of the spike. Capsules short, about half an inch long. It was discovered at La Vera Cruz by Dr. Houstoun, [and cultivated by Mr. Miller before 1733: His specimen is in Sir Joseph Banks's herbarium.

14. This rises by a slender stem to the height of about three feet from the ground, and shoots into a great number of branches that grow gradually less as they ascend, and are disposed in an opposite order, as well as the leaves from whose axils they commonly shoot^p. It resembles *J. sexangularis*, but the bractes are narrow and acuminate^q. Swartz doubts whether it be really distinct from *J. sexangularis*.—Native of Jamaica.

15. Root pubescent, woolly at top. Leaves radical, several, narrower at the base, subsessile. Scapes several, very simple, longer by half than the leaf, imbricate, with lanceolate acuminate appressed scales. Spike terminating, cylindrical, simple, imbricate, with ovate acute concave scales. Calyx five-parted; upper segment oblong, broader than the rest; the two lower linear villose.

β. There is a variety with lyrate-pinnatifid leaves, and smooth veins, which perhaps may be a different species. There is another in Sir Joseph Banks's herbarium, from North America, with the leaves quite entire, and smooth on both sides^r.

Retzius observes, that the leaves are usually lyrate, but that some on the same plant are entire.

Found in the East Indies by Koenig.

16. Stem roundish, compressed, jointed. Leaves petioled, smooth, acuminate, quite entire. Spike

^d Vahl.

^e Linn. spec.

^f Loureiro.

^g Gertner.

^h Vahl.

ⁱ Linn. spec. Vahl, Loureiro.

^k Vahl.

^l Ibid.

^m Linn. suppl.

ⁿ Gertner.

^o Vahl.

^p Browne.

^q Linn. amoen.

^r Vahl.

^s Linn. syst.

strobile-shaped; with spreading, upright bractes. Tube of the corolla filiform, incurved, longer than the bracte; border blueish; upper lip very narrow, bifid at top, lower trifid, the middle segment broader. Anther at the bending of the upper lip^a.

Loureiro says it grows five feet high, upright with spreading branches, Mr. Miller affirms that] it rises in its native soil with a strong woody stem ten or twelve feet high; that the leaves are five inches long, and two inches and a half broad, of a lucid green and opposite; that the flowers grow in very long spikes from the end of the branches, and are of a greenish colour with a shade of blue.

[Native of the East Indies, Cochinchina, &c. Cultivated in 1759, by Mr. Miller^c.

17. Stem upright, six feet high, round, scarcely branched, often several from the same root. Leaves ovate, acuminate at both ends, obscurely toothletted, the upper surface smoothish, the lower tomentose, with ascending and parallel veins, opposite, on short petioles, eight inches long. Spikes upright, dense, four-cornered, three inches long, mostly in pairs or fours. Bractes roundish-cordate. Flowers without smell, in four rows, of a fine bright red.

It differs from the *Justicias* in the structure of the corolla and the number of stamens, which are four, filiform, upright, of the same length, inserted into the lower part of the corolla, and nearly as long as that^b. The younger Linneus, in the Supplement, reckons only two stamens, and says that his plant differs from that of Jacquin in no other respect.

I should be inclined to refer it to *Ruellia*; but Jacquin observes that it differs very much both from that and *Barleria* in the petals and the equality of the stamens. He refers it to this genus on account of the habit and the agreement of the fruit.

Native of South America, frequent near Carthagena.

18. This is an upright elegant plant, growing six feet high among bushes and in hedges, but only three feet in other situations. It appears to be an annual plant. Stems round, smooth. Leaves quite entire, shining on the back, but somewhat rugged on the upper surface, on short petioles, opposite, half a foot long. Bractes under each flower in threes, blunt with a little point, somewhat hairy on the back, upright, much longer than the calyx. Flowers void of scent, purple. It has altogether the character of *J. eustachiana*.—Native of Carthagena in Spanish America^x.

19. Branches roundish, smooth, opposite. Leaves petioled, about a span in length, much attenuated at the base, decurrent along the petiole, nerved, obscurely veined, a little attenuated at the tip, smooth on both sides, except along the midrib and larger veins, not at all soft. Spike solitary, sessile, imbricate. Bractes brown, somewhat convex on the outside, acute, concave within; the outer ones closely imbricate. There are two others at the base of each calyx, longer than the outer one, lanceolate, white tomentose on the outside with very close villose hairs, within hollow, smooth, pale, somewhat ferruginous at the tip, as are also the calyxes. The rachis between the flowers is also covered with very close villose hairs. Calyx five-leaved; leaflets lanceolate, longer than the bracte, striated, very smooth, the two inmost narrower. Upper lip of the corolla bifid; segments linear-lanceolate; lower lip undivided, lanceolate. Filaments a little shorter than the corolla; anthers parallel. Germ oblong.

It was sent from Cayenne by von Rohr as *J. pulcherrima* of Jacquin, with which it agrees in the leaf and corolla; but the leaves are not soft to the touch underneath, the spikes are terminating and solitary, not axillary two or four together, the bractes ovate not subcordate-round, the anthers small and smooth, not very large and villose at the back; nor has von Rohr mentioned any thing of the inner bractes and rachis being tomentose. It differs from *J. pulcherrima* of Linneus in the smoothness of the branches, and in the leaves not being hoary with soft hairs underneath, nor quite entire. It is certainly different from *J. pulcherrima* of Vahl's second part^y.

20. Stem six feet high, nearly erect, round, covered by a smooth brown bark, cracking longitudinally. Branches erect, leafy, swelled at the insertion of the leaves; the younger ones slightly quadrangular, smooth. Leaves about the tops of the branches, opposite, spreading but a little deflexed, entire, waved, veiny, dull green, smooth, veins alternate: foot-stalks short, roundish. Spikes terminating, mostly solitary, erect, simple, dense, many-flowered; at length appearing lateral from the growing out of young branches. Common flower-stalk resembling the branch, roundish. Larger bractes nearly alternate, shaped like the leaves, but much smaller, nearly erect; slightly downy, one to each flower; smaller ones two together above each of the larger, minute, linear, acute, scarcely perceptible in the upper part of the spike. Flowers sessile, one between each pair of the smaller bractes, erect, large, handsome, scarlet becoming tawny in decay. Segments of the calyx inflexed and slightly downy. Corolla an inch and half long, incurved, angular; the angles slightly downy; the limb four-cleft; its upper segment broadest, recurved at the tip, notched; three lower ones equal, linear-oblong, obtuse, entire, pendulous. Filaments inserted into the base of the corolla before, scarcely so long as the limb, a little incurved, simple, linear, angulated, downy, tawny. Anthers linear, obtuse, cloven at the base, incumbent, tawny. Germ superior, standing on a white fleshy receptacle, ovate, compressed, furrowed on the edges, green, very smooth. Style a little longer than the stamens. Stigma minute, cloven.

This is the largest species, at least of those that are cultivated here, and grows in the hot-house almost to the size of a tree. The flowers are only to be found on old plants. The leaves, when bruised, have an herbaceous smell, like some trefoils; the flowers have no smell.

Native of South America. Found by Aublet, on the banks of rivers in the island of Cayenne, flowering in October, November and December. Here it flowers in summer^z. Introduced about 1770^a.

21. Branches obscurely quadrangular, pubescent, with internodes three inches long. Leaves petioled, an inch long, remote, blunt, ending at the base in a short petiole, bluntly and remotely toothed, with minute hairs pressed close on both sides, whiter underneath. Spikes peduncled, opposite or alternate, an inch long: peduncles longer than the leaves, often two-leaved; leaflets lanceolate, with the rudiment of a flower in the axils. The lower bractes ovate-lanceolate, with three or four toothlets on each side: the rest ovate, quite entire; all hirsute especially at the edge. Flowers opposite, with two bristle-shaped bractes at the base. Segments of the calyx linear-lanceolate, hirsute.—Found in Java, by Thouin^b.

22. Branches round. Leaves on very short petioles, two inches long, ovate, acute, quite entire, smooth. Spikes from the upper axils, a pair on each side, opposite, on very short peduncles, two inches long, upright. The lowest flowers opposite, the rest alternate. Bractes from upright spreading, three to each flower, permanent, half an inch long, narrow. Calyx five-parted; segments linear-awl-shaped, shorter by half than the bractes. Capsules pubescent, the length of the bractes.

Native of the Caribbee islands^c.

23. Stem smooth, round. Leaves on very short petioles, two inches long, quite entire, smooth, bluntish, with simple veins. Spikes from the end of the branches, a hand in length. Flowers two or four on each side. Bractes bristle-shaped. Under each whorl a linear-lanceolate leaflet on each side, on a short petiole, the length of the flowers, the upper leaflets smaller. Segments of the calyx bristle-shaped. Corolla yellow. Style the length of the corolla^d.

Native of the East Indies.

24. This varies with shorter denser hairy spikes, figured by Plukenet in t. 392. f. 4; and with longer narrower smooth spikes, figured by the same author in t. 56. f. 3; with smaller rounder leaves, the stems branch-

^a Linn. syst. ^b Hort. kew. ^c Jacquin. ^x Ibid. ^y Vahl.

^z Smith. ^a Hort. kew. ^b Vahl. ^c Ibid. ^d Ibid.

ing very much and diffused, the stem more upright, or the leaves lanceolate^e.

Burman says that his specimens agree with hort. malab. 19. t. 94. and Pluk. phyt. t. 392. f. 4. (in which the spikes are longer) in figure, more ovate leaves, and sessile imbricate shorter incrassated spikes. Native of Ceylon and Java.

25. Leaves opposite. Racemes (spikes) simple, from each axil, the length of the leaves, spreading. Flowers sessile, remote, upright. Calyxes bristle-shaped, long^f. Native of the East Indies.

26. Stem smooth. Leaves three or four inches long, scarcely an inch in breadth, attenuated, blunt, quite entire, smooth. Petiole linear, filiform, an inch long. Spikes double the length of the petiole. Flowers alternate. Bractes two at the base of the calyx; one smaller, the other the same length with the calyx, covering the flower; both lanceolate, acuminate. Segments of the calyx bristle-shaped. Corolla small, twice the length of the calyx—Native of the island of Mahé. Thouin^g.

27. Branches round, smooth. Leaves three inches long, broad-ovate, smooth, quite entire, on a petiole only two lines in length, channelled above, convex underneath. Peduncle terminating, upright, often a foot long, with two opposite branches at bottom, a span long and simple. Flowers below two or three on each side, solitary above; the lower ones more remote. Bractes two, awl-shaped, shorter than the calyx. Segments of the calyx five, bristle-shaped, scarcely villose. Tube of the corolla narrow, three times the length of the calyx. Capsules somewhat hairy. It approaches to Rheed. malab. 9. 83. t. 44. and perhaps is not different, but the flowers are smaller in Koenig's specimens.—Native of the East Indies^h.

28. Stem striated, eight feet high, the thickness of the human arm; with ascending, whitish, even, brittle branches. Leaves quite entire, shining, petioled, opposite, dusky green, beautifully marked with a long, white, lucid, sinuated spot in the middle, whence the trivial name; the lateral ribs are parallel and oblique. Flowers in short spikes. Calyx five-cleft, acute, short, permanent. Corolla red; border oblong; mouth inflated; upper lip curved in, emarginate; lower spreading, trifid, equal:—according to Loureiro, upper lip concave, quite entire, lower bifid. Stamens straight, under the upper lip. Anthers incumbentⁱ. Bractes minute, ovate^k.—Native of the East Indies.

29. Branches obscurely quadrangular, very smooth, ash-coloured, alternately compressed at the tip. Leaves often a span long, quite entire, veined, very smooth, on short petioles. Peduncle terminating, compressed, a span long; at the base often two branches, opposite, spreading. Pedicels several, three or five on each side, aggregate, opposite, filiform, distant: bractes minute, awl-shaped at the base. Calyx smooth, minute, five-cleft, with bristle-shaped segments. Upper lip of the corolla bifid, with lanceolate segments; lower trifid, more deeply cut. Filaments only half the length of the corolla. Anthers simple. It has the habit of *J. variegata*, Aubl. guian. t. 4. which differs however in having sessile leaves, flowers in spikes, peduncles and calyxes rough-haired^l.

Jacquin says, that it very much resembles *J. hirsuta*; and that, besides the two fertile stamens, there are at the bottom of the corolla two barren filaments, which Vahl could not discover.

Native of the West Indies; Martinico, Guadaloupe, and S. Cruz.

30. Stem smooth, quadrangular; angles acute, with a groove on each side; the internodes two inches long. Branchlets axillary, a little longer than the petiole, flower-bearing. Leaves an inch and more in length, spreading, quite entire, acuminate, running a little down the petiole, smooth above, paler underneath, veined: petiole shorter by half than the leaves. Peduncles from the axils of the leaves on the branchlets, opposite, filiform, two-parted, spreading very much, one-third of the length of the leaves: pedicels op-

posite, upright: bractes linear the length of the pedicel at the base of each pedicel, and two at the base of the division of the peduncle. Flowers small: a linear leaflet, a little dilated at the tip and below, covering the calyx at the base half way. Calyx deeply five-cleft, a little shorter than the bractes; segments bristle-shaped, rough-haired, as are also the pedicels, the same length with the tube of the corolla; the lower lip of which is three-toothed. Anthers simple.

It differs from the next species, to which it approaches in habit, by a stem three times the thickness, longitudinally grooved, broader leaves on long petioles, peduncles three times shorter than the leaves, once bifid, flowers opposite longer than the calyxes and bracted at the base, and smooth filaments.—Native of Malabar. Koenig^m.

31. Stem a foot and half high, stiff, four-cornered; angles sharp, smooth, with two streaks at the sides. Leaves like those of *J. pectoralis*, an inch and half long, attenuated to both ends, ending in a very short petiole, quite entire, smooth, bluntish. Peduncles quadrangular, smooth, spreading very much: the axillary one solitary, opposite, mostly bifid, somewhat branched: the terminating one panicle-branched: partial peduncles opposite. Pedicels alternate, remote, capillary, solitary but frequently with the rudiment of a second in the axils of the bractes. Bractes opposite, those under the first ramifications linear-lanceolate; at the base of the pedicels awl-shaped and very short; at the base of the calyx none. Calycine segments awl-shaped, nearly equal, pubescent. Corolla pubescent on the outside: upper lip bifid, linear, blunt: lower trifid, with lanceolate segments. Filaments extremely hirsute longitudinally, almost as long as the corolla. Anthers simple. Capsule scarcely an inch long, linear, margined, sharp at both ends, mucronate, shining yellow with a purple line along the middle.—It differs from the other species, in having capsules compressed flat and of the same breadth from end to end.—Native of the East Indiesⁿ.

32. Stem roundish, smooth, very finely striated. Branches alternate. Leaves on very short petioles, an inch or more in length, attenuated, thinly hairy, spreading very much, remotely toothed, veined; veins alternate, simple: the upper leaves lanceolate, quite entire. Racemes pubescent. Pedicels short. One bractes at the base of the pedicels, and two under each flower. Calyx deeply five-cleft; segments linear-lanceolate, one-third of the length of the corolla. Lips of the corolla divaricating: upper narrower, two-toothed; lower trifid, with lanceolate segments: the lips have changed places. Stamens in the lower lip, the length of the corolla. Anthers simple.—Native of Java. Thouin^o.

33. Stem shrubby, somewhat angular, three feet or more in height, green, very much branched, slightly pubescent. Leaves opposite, on short footstalks, running out to a blunt point, veiny, a little downy. Peduncles alternate, with two small bractes at each division. Flowers pure white, inodorous. Calycine leaflets lanceolate, entire, permanent. These, as well as the whole of the plant are beset with minute, transparent globules, visible with a magnifier. Corolla deciduous; tube linear, grooved, pale green, slightly villose, bending a little upwards; upper lip very narrow, bent back, the edges towards the base rolled back, so as to make it appear in that part almost tubular; lower lip hanging down, trifid; segments equal, obtuse at the base, round; the mouth marked with fine purple dots. Filaments short, projecting from the mouth of the tube, finally bending back. Anthers at first yellow, afterwards livid. Germ oblong, smooth. Style capillary, slightly hairy. Stigma bifid. It produces almost the year through abundance of flowers, distinguished not less for their singularity than their snowy whiteness. The bruised leaves are used in the East Indies, where it is a native, for the cure of cutaneous eruptions. Introduced into the Royal Garden at Kew since the publication of the Catalogue in 1789^p.

^e Vahl. ^f Linn. zeyl. ^g Vahl. ^h Ibid.
ⁱ Linn. Loureiro. ^k Vahl. ^l Ibid.

^m Vahl. ⁿ Ibid. ^o Ibid. ^p Curtis.

34. Branches climbing, round, villose, jointed. Leaves two inches long, broad-ovate, sharp at the base, veined: veins somewhat villose on both sides. Petioles villose, subcinereous. Peduncles opposite, half the length of the leaf, first three-parted, then once bifid. Pedicels two-flowered. Bractes two, opposite, very minute, bristle-shaped, at the base of the pedicels and calyx. Calycine segments bristle-shaped.—It varies with the branches, and veins of the leaves less villose, and is allied to *J. nasuta*. Native of Malabar. Koenig^{*}.

35. Stem dividing from the very bottom into long branches, resembling so many stems: these are round at bottom, but obscurely quadrangular at top, upright, weak, hairy, a foot and half high, a little branched at top. Leaves opposite, hirsute, on a ciliate petiole, quite entire, dark green on the upper surface, spreading, the lower ones remote, the upper closely and imbricately heaped, and hence having the appearance of a quadrangular spike. Flowers solitary, sessile, small, inodorous, in all the axils of the leaves. Bracte one on each side of every flower, sublinear, green, ciliate with long white hairs. Calycine leaflets like the bractes, but shorter by half. Tube of the corolla shorter than the calyx, gibbose, whitish: lower lip twice as long as the tube, flat, and spreading very much, ending in a wide and equally trifid border, wholly white, except two little sulphureous knobs at the origin, with two fulvous dots before them: upper lip ovate, two-toothed, shorter, concave, upright, brownish on both sides, with longitudinal yellow streaks. In this lip the stamens are placed. Each anther divides at bottom into two legs, the inner of which is shorter and free, the outer ends in an inflexed filament. Style awl-shaped. Stigma bifid. Capsule compressed, orbiculate, acuminate both ways, smooth, brown; containing in each cell one kidney-shaped, dark, compressed seed, appearing as if it were dusty, placed transversely, having at top and bottom a tuft of brownish hairs, which in the magnifier appear round, awl-shaped, pellucid, and divided into several chambers by transverse partitions. The whole plant is rugged. It flowers the whole summer. Its native place of growth is unknown.—Introduced in 1780, by Mons. Thouin^{*}.

36. Stem upright, very smooth, as is the whole plant, hexangular with the sides grooved. Leaves petioled, two inches long, attenuated, quite entire. Raceme a hand in length, upright, composed almost to the top of upright racemelets, an inch long, opposite; towards the top simple, with opposite flowers. Flowers on the racemelets alternate, four or five, on short pedicels. Bractes two, bristle-shaped, the length of the pedicel, and at the base of the pedicels. Calycine segments linear-lanceolate. Corolla purple, bifid; upper lip linear, entire; lower subtrifid. Filaments capillary, the length of the corolla. Anthers two, pedicelled. Style the length of the corolla, capillary.—Native of the island of Trinidad: von Rohr^{*}.

37. See *Dianthera debilis*.

38. See *Dianthera violacea*.

39. Stem upright, branched, quadrangular, very finely pubescent at top, somewhat hoary. Leaves six or eight inches long, and two or three broad, attenuated, sharp at both ends, nerved, smooth, on petioles two inches long. Partial spikes on short peduncles, opposite. Peduncles pubescent. Flowers opposite. Bractes in pairs, pubescent, the length of the calyx. Calycine leaflets linear-lanceolate, pubescent. Upper lip of the corolla linear-lanceolate, undivided; lower trifid. Filaments undivided. Anthers two on each filament, one placed a little above the other. Native of Cayenne. Von Rohr^{*}.

40. Stem upright, stiff, obscurely quadrangular, hairy backwards at the angles. Leaves three inches long, attenuated, sharp, quite entire, smooth above, shining, hairy underneath, spreading very much, on very short petioles. Spikes solitary, upright, shorter by half than the leaf, imbricate, axillary, with one terminating. Anterior bractes ovate, membranaceous,

nerved, hairy-ciliate; the dorsal ones half-ovate, ciliate, cusped, one at the base of each flower. Flower solitary, sessile in the axils of the bractes. Calycine segments bristle-shaped. Filaments bifid at the tip, one segment upright, the other bent down; with a single anther on each segment. Native of Cayenne. Von Rohr^{*}.

41. Stem round, smooth, as is the whole plant. Leaves on short petioles, two inches and more in length, with raised nerves on both sides, quite entire, bluntish, paler underneath. Peduncle simple, three or four inches long, flowering at top, in a spike an inch long: flowers solitary, opposite. Bractes three to each flower: the outer much broader, narrowed at the base, obovate; the two side ones oblong, attenuated at the base, shorter than the outer, subciliate, with minute hairs. Calycine segments lanceolate. Corolla large, purple, cloven beyond the middle: upper lip lanceolate, two-toothed, shorter than the lower; which is three times broader, and trifid; the segments oblong. Stamens the length of the upper lip. Native of the island of Santa Cruz in America. Pflug^z.

42. See *Dianthera flava*.

43. See *Dianthera americana*. Mr. Miller's specimen is in the Banksian herbarium.

44. See *Dianthera punctata*.

45. This is an upright shrub, three feet high, with round brittle stems. Leaves quite entire, smooth, on short petioles, opposite, three inches long. Common peduncles racemed, little divided; the terminating many-flowered, the axillary three-flowered or thereabouts. Bractes usually in threes, shorter than the calyx. Flowers inodorous, purple. Capsules wedge-shaped^a.

According to Vahl, there are frequently two or three flowers within a six-leaved involucre; the two outer leaflets larger, widening outwards, mucronate, one a little shorter than the other, the remaining four equal and awl-shaped.

Native of the West-Indies; common on the arid open hills of St. Eustatia.

46. This is an upright plant, two or three feet in height. (Browne says, it seldom rises more than ten or twelve inches.) Probably it is annual. Leaves acuminate, two inches long. Panicles terminating, dichotomous, slender. Flowers numerous, red, sessile. Bractes bristle-shaped. The whole plant has the smell of new hay mixt with a refreshing aromatic scent.

Native of the West Indies; (Domingo and Martinito) where the inhabitants make a syrup of it, which they use against disorders of the breast. The bruised leaves are also good in wounds and cuts; whence the French there call it *Herbe à charpentiere*^b.

47. See *Dianthera comata*.

48. Branches a foot long and more, quite simple, opposite, from upright spreading, obscurely angular, with internodes from three to four inches in length; there are frequently two other shorter branches from the axils. Leaves two inches long, very remote, acuminate, somewhat rugged, paler underneath, on filiform petioles two or three lines in length. Peduncles at the ends of the branches, from the axils of the terminating leaves, three or five, equal, broader at top; the lateral ones trifid, the middle ones undivided. Bractes at the base, bristle-shaped. Besides these, there are two lanceolate acuminate leaflets, one shorter than the other, protecting two or three flowers. Calycine segments bristle-shaped. Capsules villose. Observed in Malabar by Koenig^c.

49. Stem round, smooth. Leaves two inches long, ovate, acute, smooth, quite entire, on short petioles. Common peduncles opposite, three times as long as the leaf, quadrangular, pubescent at top, with sharp angles: partial peduncles umbelled, four, an inch long, pubescent, the middle ones a little longer. Pedicels three or four, very short, umbelled. Bractes of the peduncles and pedicels in pairs, opposite, oblong, acuminate—of the flowers rhomb-shaped, blunt, membranaceous, veined, much larger than the calyx,

^{*} Vahl.

^z Jacquin.

^a Hort. kew.

^b Vahl.

^c Ibid.

^{*} Vahl.

^z Ibid.

^a Jacquin.

^b Ibid.

^c Vahl.

one smaller—of the calyxes linear, awl-shaped, the length of the calyx, which is small and pubescent. Corolla longer than the bractes, pubescent on the outside, with the lower lip three-toothed. Stamens shorter than the corolla. Native of Otaheite^d.

50. Stem branched, pubescent, round. Leaves petioled, two inches long, ovate-lanceolate, bluntish, quite entire, the younger ones pubescent. Peduncles shorter than the petiole, with four nearly equal pedicels at top. Bractes four under the umbel, awl-shaped, spreading very much, a little reflex at the tip. Calyx and floral bractes as in the preceding, only mucronate and pubescent, the two middle ones larger, as in the other species allied to it. Capsule pubescent. Native of Botany Island. Fabricius^e.

51. Stem covered with an ash-coloured bark except at top, where it is green. Branchlets quadrangular, opposite, short, spreading very much. Leaves petioled, an inch long, ovate, attenuated, quite entire, bluntish, smooth on both sides. Peduncles solitary, short, pubescent, with three one-flowered pedicels at top, double the length of the peduncle, a little dilated at top, the middle one a little longer. Bractes of the peduncle four at the sides, awl-shaped, spreading very much, reflex: floral bractes oblong, parallel, one smaller: calycine bractes lanceolate. Calyx as in the preceding. Corolla pubescent, half as long again as the bractes.—This is very nearly allied to the two species immediately preceding. Native of Java.—Thouin^f.

52. This resembles *J. chinensis* so much, that it may be considered as a mere variety. It differs only in the form of the bractes, and the number of the anthers^g.

Forstkahl describes the leaves as lanceolate-ovate and entire; the flowers as sessile, in heads, violet-coloured, whorled; with obovate-lanceolate, ciliate, mucronate bractes, bigger than the calyx; the whorls peduncled.

53. Branches obscurely quadrangular, smooth; with internodes three inches long, somewhat gibbose on one side at the base. Leaves an inch long, ovate, a little attenuated, sharp at the base, very smooth; on loose petioles, the lower ones the length of the leaves. Pedicels unequal. Bractes two at the base of the pedicels, petioled, oblong, acute: floral bractes three under each calyx, unequal; two awl-shaped, the third ovate. Native of the East Indies. Schumacher^h.

54. This is an upright plant, with slender round branches. Leaves opposite, on short petioles. Floral bractes acute, small, commonly two to each flower. Flowers inodorous, purple. Native of the West-Indies; frequent in the island of St. Eustatia in hedges and coppices; flowering in July and Augustⁱ.

55. Stem upright, six feet high. Leaves quite entire, thick, subsessile, opposite. Branches and leaves marked with black lines. Corolla white, variegated with red: upper lip lanceolate, entire, upright; lower trifid, reflex. Bractes bristle-shaped. Native of Cochinchina.

56. Stem branched, procumbent, long, round, grooved. Leaves acuminate, opposite. Bractes conical, bluntish. Peduncles one-flowered, many together. Corolla rose-coloured; both lips reflexed: the upper ovate, quite entire; the lower oblong, blunt, trifid. The leaves dye cloth of a fine green colour. Native of Cochinchina^k.

Loureiro has another species, which he suspects may be the *fastuosa* of Linneus; but it can scarcely be the same, since he describes the leaves as elliptic and subserrate; the flowers in compound racemes or thyrses; the upper lip of the corolla acute, and the lower trifid: whereas in the *fastuosa* the leaves are sharp at both ends, and quite entire; the flowers all point one way; the upper lip of the corolla is blunt, and the lower entire.]

57. Malabar Nut rises here with a strong woody stem to the height of twelve or fourteen feet, sending out many spreading branches. Leaves more than six inches long, and three inches broad, placed opposite.

Flowers on short spikes at the end of the branches. Corolla white, with some dark spots. It flowers in July, but does not bear seeds in England. Native of Ceylon. [Cultivated in 1699, by the Dutchess of Beaufort. It flowers in May and July^l. Mr. Miller's specimen is in the Banksian herbarium.

58. Stem nearly as in *Adhatoda* and *Ecbolium*, but more herbaceous. Leaves smaller, more remote, lanceolate-ovate. Bractes waved, opposite, ovate, acuminate, netted-veined, coloured. Upper lip of the corolla broad, as in the preceding species, but the lower lip differently constructed. Native of the East-Indies.

59. This plant has the appearance of *Thymus Acinos*. In Herman's specimen the leaves are much broader than in Burman's figure (which is not our plant), ovate and crenulate. Stems procumbent, putting out roots from the joints. Spikes with lanceolate bractes, by no means membranaceous at the edge^m.—In the species it is said that the bractes are widely membranaceous at both edges—and in the systema, that it varies with lanceolate, sessile leaves. Native of Ceylon.

60. The herb has the appearance of *J. repens*. Branches opposite, long, diffused. Leaves opposite, quite entire, even, petioled. Spikes solitary, with very small flowers, underneath longitudinally imbricate in a double rowⁿ. Native of the East Indies. Koenig sent it from Calcutta, and it is thus described by Retzius under the name of *J. parviflora*.

Stems subherbaceous, diffused, angular, pubescent. Leaves ovate, quite entire, acute, somewhat hispid. Spikes half an inch long, terminating and axillary, peduncled, pointing one way, many-flowered. Dorsal bractes imbricate, lanceolate, acuminate, green, obliquely nerved, with a thin white margin: the anterior ones like these, but winged as it were with a wider margin, somewhat hirsute within: the upper ones emarginate. Calyx minute, hyaline, with sharp teeth. Corolla minute, white, with a green upper lip.

Vahl remarks, that the spikes are sessile, as in the preceding, and the dorsal bractes lanceolate; whereas in *repens* they are ovate.

61. The whole plant is of a blood-red colour, whence its trivial name. Stem simple, the lower internodes two inches, the upper scarcely half an inch in length. Leaves an inch long, usually quite entire, but sometimes obscurely crenate, blunt, smooth, on petioles twice or three times as long as the leaf. Peduncles imbricate at top, with six minute, bristle-shaped, opposite scales. Calycine segments bristle-shaped, longer than the tube of the corolla, which is short: upper division of the corolla oblong, emarginate; lower twice as broad, the length of the upper, subtrifid, the segments lanceolate. Found in Ceylon by Koenig^o.

62. See *Dianthera japonica*.

63. This is a stiff shrub, with opposite, distorted, warted, round branches, quadrangular at top, with an ash-coloured pubescent bark, leafless at bottom. Leaves petioled, an inch long, approximating, quite entire, coriaceous, veinless, nerved; when young somewhat ash-coloured. Peduncles only half the length of the petiole, solitary, two or three-flowered. A bracte on each side at the top of the petiole, lanceolate, longer than the calyx; another at the base of each flower, ovate, ash-coloured, shorter than the calyx. Calycine segments lanceolate, subvillose. Corolla an inch and half in diameter, with equal lips; the upper lanceolate, blunt, entire; the lower trifid, with linear segments. Stamens the length of the corolla. Style longer^p. Native of Arabia Felix.]

64. Stem from three to four feet high, sending out branches on every side from the bottom, so as to form a pyramid; they are covered with a white bark. Leaves entire, near two inches long, and one third of an inch broad, smooth, stiff, deep green, opposite: at the base of the foot-stalks come out clusters of smaller leaves, of the same shape and texture. Peduncles short.

^d Vahl.

^e Ibid.

^f Ibid.

^g Ibid.

^h Ibid.

ⁱ Jacquin.

^k Loureiro.

^l Hort. kew.

^m Linn. zeyl.

ⁿ Linn. amoen.

^o Vahl.

^p Ibid.

Flowers white, with long calyxes. Capsules oblong, when ripe throwing out their seeds, whence its name of Snap-tree. Native of the Canary islands, whence the seeds were brought about the year 1690, and cultivated in the royal garden at Hampton Court.

[65. This is a very stiff smooth shrub. Leaves small, extremely stiff, almost prickly at the end. Found at the Cape of Good Hope by Thunberg^a, and Masson. Introduced in 1774. It flowers in august and september^c.

66. Stem solid, round, smooth, whitish. Leaves opposite, subpetioled, smooth, blunt, either emarginate or acuminate at the tip. Bractes in pairs, deciduous. Flowers few. Capsule oblong, narrowed at the base, sharpish. Native of Madura^d.

67. This is a stiff shrub, with an ash-coloured bark. Branches and branchlets opposite, spreading, angular, jointed, with a small tubercle on each side at the top of every joint. Leaves sessile, thick, with veins underneath, but none above, quite entire. Flowers alternate, with two linear bractes at the base, the length of the calyx. Calycine segments linear-lanceolate. Corolla like that of *J. hyssopifolia*: anthers one above the other as in that, the lower having at the base a white awn bent in at the tip. Native of the Cape of Good Hope. Dahl^e.

68. Stem round, red, covered with slender, white, soft hairs. Leaves somewhat fleshy, petioled, waved, small. Spikes terminating; with opposite obcordate bractes, pressed close, with solitary flowers in their axils. Found in Tranquebar by Koenig^f.

69. Stem ash-coloured. Branches obscurely quadrangular, four-grooved. Leaves petioled, coriaceous, veinless, mucronate^g.

Native of Arabia Felix, where they make wreaths of it to wear on their heads on festivals. It has little smell when green; but dry it smells like *Anthoxanthum* or Vernal-grass^h.

70. Branches round. Leaves quite entire, smooth, on long petioles. Peduncles at each joint of the stem solitary, the length of the leaf, even. Spike oblong, imbricate, in two rows; with lanceolate, ciliate bractes; between which are four smaller linear bractes. Calyx hairy at top. Corolla handsome, white; with a filiform tube, inclosing the stamens, and a border the size of *Narcissus poeticus*, with five spreading lobes, the lowest of which is larger than the rest. Native of the East Indiesⁱ. This is probably rather a species of *Ruellia*.

71. Branches angular, with a smooth ash-coloured bark. Leaves petioled, three inches and more in length, very smooth, attenuated to both ends; segments remote, alternate, rounded^j. Native of the island of Tanna^k.

72. Stem five feet in height, dividing into few, round, weak, pliant, leafy, very long branches. Leaves quite entire, blunt, shining, opposite, about half an inch in length. It is armed with strong, opposite, very spreading, awl-shaped, acuminate spines, half the length of the leaves. Between the leaves and spines come out the peduncles, three or four together, one-flowered, short, opposite. Flowers inodorous, shorter than an inch, purple. Native of the West Indies; about Port au Prince in Domingo^l, and Jamaica. Vahl remarks, that there are frequently several leaves from the same gem; and that it varies with oblong, obovate, roundish, emarginate, greater and smaller leaves.]

Mr. Miller adds, that the branches are covered with a whitish bark; that under the leaves at every joint there are two sharp thorns like those of the Barberry; that the flowers, which come out singly from the axils, are small, and of a pale red colour. Dr. Houstoun sent it from Jamaica to England, [and therefore Mr. Miller cultivated it before 1733, in which year Dr. Houstoun died. His specimen is in the Bankian herbarium.

73. Native of the island of Tanna in the South Seas^m. Discovered there the 13th of august 1774ⁿ.

^a Linn. suppl.

^b Vahl.

^c Forskahl.

^d Forster.

^e Hort. kew.

^f Linn. suppl.

^g Linn. spec.

^h Jacquin.

ⁱ M. S. Banks.

^j Burman.

^k Vahl.

^l Vahl.

^m Forster.

74. 75. Natives of Jamaica.

76. Annual. Native of St. Domingo.

77. Annual. Native of Jamaica.

78. Perennial. Native of Jamaica and Hispaniola^f.]

79. This rises with a hairy shrubby stem four or five feet high, dividing into several branches. Leaves four inches long, and two inches and a half broad, opposite, on foot-stalks above an inch long; at the base of these comes out a cluster of small leaves. Flowers in loose clusters from the axils towards the end of the branches, of a pale red colour.

Discovered by Dr. Houstoun at Campeachy. [Cultivated by Mr. Miller before 1733. His specimen is in Sir Joseph Banks's herbarium.]

80. This rises with a strong woody stem twenty feet high, dividing into many crooked irregular branches, covered with a light-brown bark. Leaves near four inches long and two broad, which are covered with a soft down on their under side. Three, four or five spikes arise from the same point, the middle one near three inches long, and the others about half that length. The flowers are small and white. It was found by Dr. Houstoun at Campeachy; [and was cultivated by Mr. Miller before 1733.

To the above copious list of *Justicias* we might add many more, that have been discovered in the East and West Indies, at the Cape of Good Hope, Sierra Leone, &c. but these are not yet sufficiently known or determined to lay them before the public.

PROPAGATION AND CULTURE.

These plants are all the produce of warm climates, and not one is a native of Europe. Most of them, except a few from the Cape, require the protection of the bark-stove. They may be propagated from seeds, where these can be obtained; and the greater part being shrubby, may also be increased from cuttings. Many of them are beautiful, and would be a great ornament to the stove; but few only are yet introduced among us.

The Malabar Nut (n. 57.) and the Snap-tree (n. 64.) were known among us at the end of the last century; two or three others were sent to Mr. Miller by Dr. Houstoun early in this century; but very few have been introduced since.]

57. The Malabar Nut, *Justicia Adhatoda*, may be propagated by cuttings, which, if planted in pots in june or july, and plunged into a very moderate hot-bed, will take root; but they must be every day screened from the sun, and if the external air is excluded from them, they will succeed better than when it is admitted to them. It may also be propagated by laying down the young branches, which will take root in the tubs or pots in one year; then the young plants should be put each into a separate pot, filled with soft loamy earth, and placed in the shade till they have taken new root, when they may be placed in a sheltered situation during the summer, but in winter they must be housed, and treated in the same way as Orange-trees, with only this difference, that these require more water.

64. The Snap-tree, *Justicia hyssopifolia*, is propagated by cuttings during any of the summer months; they should be planted in pots filled with light loamy earth, and plunged into a moderate hot-bed, and shaded from the sun, and now and then gently refreshed with water, and not too much air admitted to them. In about two months the cuttings will have taken root, then they must be gradually inured to the open air, by placing them in a sheltered situation, where they may remain till autumn: if they get root early in the summer, separate them each into a small pot, setting them in the shade till they have taken new root, and place them as above directed; but if it be late in the season before they have taken root, let them remain in the same pots till the following spring. In winter these plants must be placed in a warm green-house or moderately warm stove, for they are impatient of cold and damp, nor will they thrive in too much warmth. They will often require water in winter, but it must then

^f Swartz. prodr.

be given them moderately. In summer they must be removed into the open air, in a warm sheltered situation; and in warm weather they must have plenty of water.

12. 13. 16. 72. 79. 80. All these may be propagated by seeds, sown early in the spring, in small pots filled with fresh light earth, and plunged into a moderate hot-bed of tanner's bark, observing to water the earth gently as it appears dry. The seeds frequently lying a year in the ground, the pots must not be disturbed, if they should not appear; but in the winter should be kept in the stove, and the spring following plunged into a fresh hot-bed. When the plants begin to appear, the glasses of the hot-bed should be raised every day, when the weather is warm, to admit fresh air: they must also be frequently watered in warm weather, but not largely whilst the plants are young, for they are then subject to rot at bottom with much moisture.

When the plants are about two inches high, take them up carefully, and transplant each into a small pot filled with fresh light earth, plunging them into the hot-bed again, watering and shading them till they have taken new root: then they should have air admitted to them every day in proportion to the warmth of the season, and should be duly watered every two or three days in hot weather.

As the plants advance in their growth, they should be shifted into larger pots; for if their roots are too much confined, the plants will not make any considerable progress; but they should not be over potted, for that will be of worse consequence than the other; because when they are planted in very large pots, they will starve and decay, without producing any flowers. They are too tender to endure the open air in this country, therefore they should always remain in the hot-bed, being careful to let them have a due proportion of air in hot weather; and the annual or twelfth fort should be brought forward as fast as possible in the spring, that the plants may flower early, otherwise they will not produce good seeds in England.

The thirteenth and seventy-ninth forts should remain in the hot-bed during the summer season, provided there is room under the glasses, without being scorched; but at Michaelmas they should be removed into the stove, and plunged into the bark-bed, where they must remain during the winter season, observing to keep them warm, as also to water them gently once or twice a week, according as they shall require. The following summer these plants will flower, and abide several years, but they rarely produce good seeds in Europe.

The sixteenth fort may be more hardily treated, when the plants have obtained strength. This may be also increased by cuttings, as directed for the Snap-tree (n. 64.); and when the plants are two or three years old, they will thrive in a moderate degree of warmth in winter, and in summer they may be placed abroad for two months in the warmest season; but they should have a sheltered situation, and when the nights begin to grow cold, they must be removed into the stove, but they must have free air admitted to them at all times when the weather is warm. The seventy-second and eightieth forts should constantly remain in the bark-stove, and require the same treatment as other tender plants from the warmest countries.

IVY. See *Hedera*.

— Ground. See *Glecoma*.

IXIA (of *Pliny*, *Ixia* of *Dioscorides*.)

Lin. gen. n. 56. Reich. 62. Schreb. 76. Thunb. diff. 2. Gært. t. 13. Juss. 58.

Class. 3. 1. Triandria Monogynia.

Nat. order of *Ensatæ*.—*Irides*, Juss.

GENERIC CHARACTER.

CAL. *Spathe* bivalve, inferior, shorter than the corolla: valves oblong, permanent, the exterior wider, sheathing the interior.

COR. one-petalled, regular, superior; Tube filiform, gradually enlarged, straight. Border regular, bell-shaped, six-parted: divisions oblong, obtuse, equal, spreading.

STAM. Filaments three, thread-subulate, inserted into the

tube near the orifice, shorter than the corolla. *Anthers* oblong, furrowed.

PIST. Germ inferior, triangular. Style simple, filiform, upright. Stigmas three, filiform.

PER. Capsule ovate, three-sided, obtuse, three-celled, three-valved.

SEEDS several, roundish, smooth.

ESSENTIAL CHARACTER.

Cor. one-petalled, tubular; tube straight, filiform; border six-parted, bell-shaped, regular (or nearly so).—Stigmas three (or six) simple.

SPECIES.

[1. *Ixia fruticosa*. Shrubby *Ixia*.

Lin. syst. 83. suppl. 93. Thunb. diff. n. 1. fig. prodr. cap. 9.

Stem branched, covered with imbricate leaves.

2. *Ixia minuta*. Minute *Ixia*.

Lin. syst. 83. suppl. 92. Thunb. diff. n. 2. fig. prodr. cap. 9.

Scapes one-flowered, shorter, leaves even.

3. *Ixia Bulbocodium*. Crocus-leaved *Ixia*.

Lin. syst. 83. Reich. 1. 97. mant. 320. Jacqu. ic. vol. 2. collect. 3. 265. Curt. magaz. 265.

Syrinchium asprensium. Col. ecphr. 2. 5. t. 7.

S. minus angustifolium, flore majore variegato. Baub. pin. 41.

Crocus vernus angustifolius 4. Clus. hist. 1. 208.

Stem one-flowered, leaves linear, closely complicated, stigmas six.

4. *Ixia rosea*. Rose-coloured *Ixia*.

Lin. syst. ed. 13. 75. Reich. 1. 97. Mill. fig. 160. t. 240. (Bulbocodium).

I. Bulbocodium. Thunb. diff. n. 3. prodr. cap. 9.

Scapes one-flowered, leaves linear, nerved, incrassated at the edge, stigmas six.

5. *Ixia parviflora*. Small-flowered *Ixia*.

Salisb. prodr. hort. 34. n. 3.

Leaves linear, compressed, segments of the corolla lanceolate, retuse, the inner scarcely wider, stigmas bifid, spreading-revolute.

6. *Ixia fugax*. Fugacious *Ixia*.

Salisb. prodr. hort. 34. n. 4.

Leaves linear compressed, segments of the corolla linear-lanceolate, blunt, the inner wider and more erect, stigmas bifid, horizontal-recurved.

7. *Ixia humilis*. Humble *Ixia*.

Lin. syst. 84. Thunb. diff. n. 4. prodr. cap. 9.

Scape branched, flowers pointing one way, leaves grooved, erect, longer.

8. *Ixia pilosa*. Hairy *Ixia*.

Lin. syst. 84. suppl. 92. Thunb. diff. n. 5. prodr. cap. 9.

Leaves linear, hairy, shorter, flowers alternate.

9. *Ixia hirta*. Rough-haired *Ixia*.

Lin. syst. 84. Thunb. diff. n. 6. prodr. cap. 9.

Leaves ensiform, rough-haired, shorter, flowers pointing one way.

10. *Ixia secunda*. One-ranked *Ixia*.

Lin. syst. 84. Thunb. diff. n. 7. prodr. cap. 9. Berg. cap. 6. Roche pl. nov. 17.

Leaves elliptic, ensiform, shorter, scape villose, rugged.

11. *Ixia crispa*. Wave-leaved *Ixia*.

Lin. syst. 84. suppl. 91. Thunb. diff. n. 8. prodr. cap. 9.

I. undulata. Salisb. prodr. hort. 37. n. 20.

Leaves linear, waved, shorter, flowers alternate.

12. *Ixia cinnamomea*. Cinnamon-coloured *Ixia*.

Lin. syst. 84. suppl. 92. Thunb. diff. n. 9. prodr. cap. 9.

Leaves lanceolate waved, shorter, flowers alternate.

13. *Ixia corymbosa*. Corymbed *Ixia*.

Lin. syst. 84. Thunb. diff. n. 10. prodr. cap. 9.

Leaves lanceolate waved, shorter, scape ancipital.

14. *Ixia linearis*. Linear-leaved *Ixia*.

Lin. syst. 84. suppl. 92. Thunb. diff. n. 11. prodr. cap. 9.

Leaves linear, shorter, scape simple, upright.

15. *Ixia capillaris*. Slender-scaped *Ixia*.

Lin. syst. 84. suppl. 92. Thunb. diff. n. 12. prodr. cap. 9.

I. gracilis. Salisb. prodr. hort. 37. n. 22.

Leaves linear, shorter, scape branched, spathe scarious.

16. *Ixia setacea*. Bristle-leaved *Ixia*.
Lin. syst. 84. *Thunb. diff. n.* 13. *prodr. cap.* 9.
 Leaves linear, shorter, scape flexuose, smooth.
17. *Ixia scillaris*. Squil-flowered *Ixia*.
Lin. syst. 85. *Reich. i.* 99. *Thunb. diff. n.* 14.
prodr. cap. 9. *Houtt. hist. nat.* 12. t. 77. f. 2.
 Leaves linear, shorter, flowers pointing one way, rachis flexuose.
18. *Ixia aulica*. Cluster-flowered *Ixia*.
Ait. hort. kew. 1. 57.
 Flowers in racemes, bractes entire, leaves ensiform, flat, nerved, even.]
19. *Ixia bulbifera*. Bulb-bearing *Ixia*.
Lin. spec. 51. *syst.* 85. *Reich. i.* 99. *amoen.* 4. 300.
Thunb. diff. n. 17. *prodr. cap.* 10. *Mill. fig.* 158. t. 236. f. 2.
Sisyrinchium æthiopicum majus, &c. *Comm. hort.* 1. 42.
 Leaves ensiform, shorter, spathe membranaceous, bristle-shaped-jagged.
- [20. *Ixia aristata*. Bearded *Ixia*.
Lin. syst. 85. *Thunb. diff. n.* 15. *prodr. cap.* 9.
 α. *Corollis purpureis*. Purple-flowered bearded *Ixia*.
I. uniflora. *Reich. syst.* 1. 98. *Jacqu. collect.* 4. 181. ic. vol. 2. *Mill. fig.* t. 237. f. 3.
I. grandiflora. *Houtt. hist. nat.* 12. 29. t. 77. f. 3. *Roche pl. nov.* 23. *Salisb. prodr. hort.* 37. n. 26.
 β. *Cor. violaceis, laciniis margine stramineis*. Violet-flowered bearded *Ixia*. *Mill. fig.* 158. t. 237. f. 1, 2.
 Leaves ensiform, smooth, flowers alternate, sessile, spathe the length of the tube, and jagged.
21. *Ixia reticularis*. Netted *Ixia*.
Salisb. prodr. hort. 37. n. 25.
 Border of the corolla four times as long as the tube, recurved, funnel-form at the base; segments spatulate, somewhat acuminate, the inner narrower; filaments erect, stigmas at the base of the anthers.
22. *Ixia villosa*. Dark red *Ixia*.
Ait. hort. kew. 1. 58.
I. purpurea. *Jacqu. collect.* 3. 268. ic. vol. 2. 286.
I. flabelliformis. *Salisb. prodr. hort.* 37. n. 23.
 Leaves oblong-lanceolate, acute, villose, somewhat plaited, distich, tube equal to the spathe.
23. *Ixia pendula*. Pendulous-flowered *Ixia*.
Lin. syst. 85. *suppl.* 91. *Thunb. diff. n.* 16. *prodr. cap.* 9.
 Leaves linear-ensiform, shorter, scape branched, spikes pendulous.]
24. *Ixia flexuosa*. Bending-stalked *Ixia*.
Lin. spec. 51. *Reich. i.* 99. *Mill. fig.* 104. t. 156. f. 2. *Curt. magaz.* 127.
 Leaves linear, raceme flexuose, many-flowered.
25. *Ixia polystachia*. Many-spiked *Ixia*.
Lin. spec. 51. *Reich. i.* 99. *Mill. fig.* 104. t. 155. f. 2.
I. erecta. *Lin. syst.* 85. *Berg. cap.* 5. *Thunb. diff. n.* 18. *prodr. cap.* 10.
I. thyrsiflora. *Roche pl. nov.* 20.
I. ferotina. *Salisb. prodr. hort.* 34. n. 5.
 Leaves ensiform, shorter, scape branched, flowers alternate, unspotted—border of the corolla incurved and spreading very much; segments lanceolate, blunt, equal in breadth; filaments spreading and recurved; stigmas at the base of the filaments.
- [26. *Ixia longiflora*. Long-flowered *Ixia*.
Berg. cap. 7. *Ait. hort. kew.* 1. 58. *Curt. magaz.* 256. *Salisb. prodr. hort.* 37. n. 21.
I. paniculata. *Roche pl. nov.* 26. t. 1.
Gladiolus longiflorus. *Lin. syst.* 87. *suppl.* 96. *Thunb. glad. n.* 22.
 Leaves ensiform-linear, stiff, tube filiform, very long.
27. *Ixia plantaginea*. Fox-tail *Ixia*.
Ait. hort. kew. 1. 59.
Gladiolus alopecuroides. *Lin. spec.* 54. *syst.* 86. *Reich. i.* 102. *Thunb. glad. n.* 14.
 Leaves linear, stiff, spike distich, imbricated.
28. *Ixia marginata*. Broad-leaved *Ixia*.
Ait. hort. kew. 1. 59.
Gladiolus marginatus. *Lin. syst.* 86. *suppl.* 95. *Thunb. glad. n.* 20.
 Many-spiked, leaves ensiform, nerved, thicker at the edge, spikes pressed close, tube curved inwards, stigmas six.
29. *Ixia patens*. Spreading-flowered *Ixia*.
Ait. hort. kew. 1. 59.
I. flaccida. *Salisb. prodr. hort.* 35. n. 13.
I. aristata. *Schneev. ic. t.* 32.
 Leaves ensiform; smooth; raceme terminating, corolla bell-shaped, patulous, alternate segments narrower, filaments upright—stigmas above the base of the anthers.
30. *Ixia maculata*. Spotted *Ixia*.
Lin. spec. 1664. *syst.* 85. *Reich. i.* 99. *Thunb. diff. n.* 19. *prodr. cap.* 10. *Mill. fig.* 104. t. 156. f. 1.
J. Milleri. *Berg. cap.* 8.
 Leaves ensiform, shorter, scape branched, flowers alternate, corollas spotted at the base.
31. *Ixia deusta*. Copper-coloured *Ixia*.
Ait. hort. kew. 1. 60.
I. gibba. *Salisb. prodr. hort.* 38. n. 31.
 Leaves lanceolate, nerved, flowers alternate, sessile, tube shorter than the bractes, borders blunt, the outer spotted at the base, and keeled—stigmas under the middle of the anthers.
32. *Ixia crocata*. Crocus-flowered *Ixia*.
Ait. hort. kew. 1. 60.
I. hyalina. *Salisb. prodr. hort.* 38. n. 27.
 α. *Floribus croceo-rufescentibus*. Common Crocus-flowered *Ixia*.
Lin. spec. 52. *syst.* 85. *Reich. i.* 99. *Thunb. diff. n.* 20. *prodr. cap.* 10. *Mill. fig.* 160. t. 239. f. 2. *Curt. magaz.* 184.
 β. *Floribus late rubris*. Red Crocus-flowered *Ixia*.
 Leaves ensiform, flowers alternate, tube the length of the bractes, borders of the corolla ovate, quite entire, hyaline at the base—stigmas at the tip of the anthers.
33. *Ixia squalida*. Squalid *Ixia*.
Ait. hort. kew. 1. 61.
 α. *I. f. patula*. Spreading squalid *Ixia*.
I. similis. *Salisb. prodr. hort.* 38. n. 28.
 Borders cuneiform-oblong, bluntly emarginate, somewhat hyaline at the base.
 β. *I. f. stricta*. Upright squalid *Ixia*.
Gladiolus lineatus. *Salisb. prodr. hort.* 40. n. 7.
 Leaves stiff and straight, borders ovate-oblong, quite entire, concolor at the base.
 Leaves linear-lanceolate, flowers alternate, sessile, tube longer than the bractes, borders ovate-oblong—stigmas below the tip of the anthers.
34. *Ixia lancea*.
Lin. syst. 85. *Thunb. diff. n.* 21. *prodr. cap.* 10.
 Leaves ensiform, shorter, flowers pointing one way, scape simple, flexuose.
35. *Ixia pentandra*.
Lin. syst. 85. *Thunb. diff. n.* 22. *prodr. cap.* 10.
I. scillaris. *Lin. spec.* 52. (n. 17.)
 Leaves ensiform, shorter, flowers five-stamened.
36. *Ixia falcata*.
Lin. syst. 85. *suppl.* 92. *Thunb. diff. n.* 23. *prodr. cap.* 10.
 Leaves ensiform, reflex-sickle-shaped, shorter.
37. *Ixia excisa*.
Lin. syst. 85. *suppl.* 92. *Thunb. diff. n.* 24. *prodr. cap.* 10.
 Leaves ovate, shorter, flowers pointing one way, scape flexuose.]
38. *Ixia chinensis*. Chinese *Ixia*.
Lin. spec. 52. *Reich. i.* 98. *hort. upf.* 16. *Gartn. fruct.* 1. 40. *Lour. cochinch.* 36. *Trew. Ebret.* 23. t. 52. *Curt. magaz.* 171. *Rheed. mal.* 11. 73. t. 37.
Moræa chinensis. *Lin. syst.* 93. *Thunb. diff. n.* 19. *jap.* 34.
Ferraria crocea. *Salisb. prodr. hort.* 41. n. 1.
Bermudiana. *Amm. in Comm. petrop.* 11. 308. t. 7.
 Leaves ensiform, panicle dichotomous, flowers peduncled.
- [39. *Ixia fallax*.
Salisb. prodr. hort. 34. n. 6.
 Border of the corolla incurved and spreading very much, segments oval, slightly emarginate, equal in breadth, filaments spreading and recurved, stigmas at the base of the filaments.

40. *Ixia mutabilis*.
Salisb. prodr. hort. 34. n. 7.
 Border of the corolla deflex, salver-shaped at the base, segments broadly obovate, retuse, the inner narrower; filaments from upright spreading, stigmas below the apex of the tube.
41. *Ixia socialis*.
Salisb. prodr. hort. 35. n. 8.
 Border of the corolla horizontal, segments elliptical, the outer emarginate, the inner narrower, blunt, filaments from upright spreading, stigmas at the middle of the filaments.
42. *Ixia lineata*.
Salisb. prodr. hort. 35. n. 9.
 Border of the corolla incurved and spreading very much, segments oval, blunt, inner narrower, filaments recurved at the tip, stigmas below the tip of the filaments.
43. *Ixia amoena*.
Salisb. prodr. hort. 35. n. 10.
 I. maculata. *Schneev. ic. 25.*
 Border of the corolla incurved and horizontal, segments oval-lanceolate, somewhat retuse, inner narrower; filaments from upright spreading; stigmas at the base of the filaments.
44. *Ixia retusa*.
Salisb. prodr. hort. 35. n. 11.
 Border of the corolla incurved and spreading very much, segments oval, retuse, inner narrower, filaments upright, stigmas at the middle of the filaments.
45. *Ixia spectabilis*.
Salisb. prodr. hort. 35. n. 12.
 I. maculata viridis. *Schneev. ic. 6.*
 Border of the corolla incurved and horizontal, segments lanceolate, outer emarginate, inner narrower, blunt, filaments from upright spreading, stigmas at the base of the filaments.
46. *Ixia concolor*.
Salisb. prodr. hort. 36. n. 14.
 Border of the corolla incurved and horizontal, segments elliptical, blunt, inner narrower, filaments from upright spreading, stigmas above the middle of the anthers.
47. *Ixia conica*.
Salisb. prodr. hort. 36. n. 15.
 Border of the corolla reflex, shaped like a dish at the base, segments elliptical, blunt, inner broader; filaments upright, stigmas above the base of the anthers.
48. *Ixia conspicua*.
Salisb. prodr. hort. 36. n. 16.
 Border of the corolla incurved and horizontal, segments elliptical blunt, inner narrower; filaments from upright recurved, stigmas at the base of the filaments.
49. *Ixia concinna*.
Salisb. prodr. hort. 36. n. 17.
 Border of the corolla reclining, funnel-form at the base, segments elliptical, blunt, inner narrower, filaments from upright recurved, stigmas below the middle of the filaments.
50. *Ixia columnaris*.
Salisb. prodr. hort. 36. n. 18.
 Border of the corolla the length of the tube, reflex, salver-shaped at the base, segments elliptical, the inner a little wider; filaments monadelphous; stigmas above the base of the anthers.
51. *Ixia erosa*.
Salisb. prodr. hort. 36. n. 19.
 Margins of the nerves duplicate-ciliate, base of the corolla funnel-form, segments elliptical, gnawn at the tip.
52. *Ixia tardiflora*.
Salisb. prodr. hort. 38. n. 29.
 Border of the corolla recurved at top, segments broadly spatulate emarginate, the three lower at the disk of the base within, putting out a little keel, stigmas at the base of the anthers.
53. *Ixia propinqua*.
Salisb. prodr. hort. 38. n. 30.
 Border of the corolla recurved and spreading at top, segments spatulate, slightly emarginate, the three lower approximating a little, at the disk of the base within putting out a little keel; stigmas at the middle of the anthers.

54. *Ixia ambigua*.
Salisb. prodr. hort. 39. n. 32.
 Border of the corolla recurved a little at top, segments rhomb-spatulate, equal in breadth, the outer somewhat gibbous at bottom, emarginate, inner blunt, stigmas above the middle of the anthers.

DESCRIPTIONS, &c.

Root fibrous or tuberous tunicated. Leaves flat, sheathing at the edge or channelled, or nerved and grass-like. Stem often compressed, sometimes scarcely any. Flowers terminating, solitary, or in spikes, panicles or heads. Spathes subunisflorous. The subseffile lobe of the germinating seed is fastened to the back of the primary sheath of the leaves^a.

Ixia differs from *Antholyza* in having the segments of the corolla nearly equal; from *Gladiolus* in the situation of the segments of the corolla, and in having the tube straight. A few of the species are referred by some to *Moræa*; whilst others would sink that genus in this.

The Spathe is longer or shorter than the tube in different species, blunt or sharp; entire or lacerated, smooth or hirsute. The tube of the corolla is more or less deeply parted; ringent, cylindrical or filiform; simple, that is, nearly equal; or double, that is, filiform at the base, and then cylindrical; curved or jointed. Border most commonly bell-shaped; equal or unequal; reflex, spreading, and curled or waved, but seldom^b.

Almost all the species are natives of the Cape of Good Hope.

1. Stem suffruticose, branched, the whole smooth and covered with leaves, a hand or somewhat more in height. Leaves linear, attenuated at the tip, subfalcate, very finely striated, very closely imbricated, from an inch to two inches in length. Flowers terminating, blue. Spathes membranaceous. Tube of the corolla yellow, half an inch in length. Native of the Cape, and of Terra del Fuego.

2. Bulb globular, covered with a net, the size of a pea. Leaves included in a sheath, linear, concave above, convex beneath, smooth, upright, the length of the scapes, and one to each scape. Scape seldom single, commonly two to four or more, simple, round, upright, smooth, pale purple, an inch long. Bractes two, a little above the middle, linear-filiform, opposite, upright, scarcely a line in length. Calyx none, except the bractes. Tube of the corolla white, with purple streaks. Segments of the border concave above of a snowy whiteness, underneath white, with a double purple streak, the length of the tube, half a line in length. Anthers upright; yellow. Capsule green, with purple streaks. The whole appearance is so like that of *Fabricia minuta*, that unless the stamens, stigma and bulb be inspected, it seems to be the same^c.

3. Bulb roundish, placed on the withered bulb, double the size of a pea, white, covered with a bay-coloured skin. Leaves three or four, in the flowering plant radical, in the fruiting cauline, spreading horizontally, half a foot or thereabouts in length, smooth, sharpish. Stem solitary, upright, two inches high, above the uppermost leaf convex on one side, flat on the other; in the fruiting plant a little higher, in the cultivated one sometimes half a foot high. Spathe terminating, two-valved; leaflets narrow-lanceolate, acute, concave, opposite; one upright, green, almost the length of the corolla; the other a little shorter, green on the back, but otherwise membranaceous and pellucid, patulous, whence the flower becomes as it were lateral. It is inodorous. The corolla pale violet, yellow on both sides at the base: the outer segments are commonly more yellow on the outside, with brownish streaks. Stamens yellow. Germ green. Style and stigma pale yellow. Capsule smooth and ash-coloured, larger than a pea. Seeds shining, brownish^d.

Native of Italy. Cultivated 1739 in the botanic garden at Chelsea^e. It is not the *Bulbocodium* of Miller. It flowers about the middle of april; but the

^a Jussieu.
^c Thunb. diff.

^b Thunb. & Schreb. gen.
^d Jacquin. ^e Hort. kew.

blossoms do not fully expand unless exposed to the sun, nor are they of long duration. It affects dry hilly situations^f. It is said to have been found in Guernsey and Jersey.

4. Bulb ovate, smooth, subtruncated. Scape three (or four) cornered, sheathed at bottom, branched, few-flowered, smooth, from a hand to a span in height. Leaves acute, grooved, smooth, the lowest, which is the longest, frequently double the length of the scape, or more, is lax and reflex; the two or three others are about the length of the scape, and upright. Flowers at the ends of the branches, rather large, coming out one after the other. Outer spathe ovate, green; inner lanceolate, acute, membranaceous, sheathing the capsule. Tube of the corolla very short: segments of the border yellow within, with three brown streaks, greenish-yellow on the outside. Filaments pubescent. Stigmas six, reflex.

It varies with the three inner segments of the corolla yellow, and the three outer green; the three inner white-yellow, the three outer greenish; the three inner blue-white, the three outer greenish; the three inner white, the three outer green; with corollas wholly yellow, or wholly blue, or rose-coloured with a yellow base. It varies also in the size of the flowers. The scape is really many-flowered, but sometimes one flower only opens. The leaves are filiform, linear or ensiform, usually longer than the scape, and frequently reflex^g.

This and the preceding were separated in the thirteenth edition of *Systema Vegetabilium*; but were considered as one species by Murray in the fourteenth; as they are by Thunberg in his *Monographia*. They seem, however, to be very distinct; the leaves of this being three or four-sided from the rib raised on both sides, and thickened at the edge. The same bulb also puts up several scapes. It is a native of the Cape, and was cultivated in 1758 by Mr. Miller^h.

5. The leaves of this are very narrow, being only half a line in width. The tube of the corolla is only a line long. It was gathered wild in Jersey, by Mr. R. Finlayⁱ. Mr. Lambert assures me that it is in Hudson's herbarium, among his Jersey plants, now in Mr. Lambert's possession. Probably only a variety of the third.

6. Leaves only one line in width. Tube of the corolla only a quarter of a line long. Found at the Cape by Masson.

This and the preceding are very nearly allied to *I. Bulbocodium*.

7. Bulb smooth, the size of a hazel nut. Scape simple or branched, filiform, upright, from a hand to a span in height. Leaves two or three, linear, many-grooved, smooth, longer than the scape. Flowers in racemes, three to eight on a flexuose rachis. Spathes green, truncated. It varies with the corolla yellow, whitish rufescent, or flesh-coloured; with an undivided few-flowered scape, and a branched many-flowered scape.

8. Bulb globular, smooth, scarcely as big as a pea. Leaves acuminate, about three, upright, striated; only about half the length of the scape. Scape simple, round, upright, smooth, many-flowered, a hand or more in height, dusky purple at top. Flowers sessile, somewhat nodding. Corolla rufescent without, white within. Segments of the corolla concave, the three lower white, the three outer white within, greenish-purple on the outside, with a white edge. Anthers linear, bifid at the base, inserted at the back above the base, yellow. Stigmas from upright bent in, rough-haired, white. Capsule six-grooved. The flowers open from four in the afternoon.

9. Leaves striated, villose, shorter than the scape. Scape simple, inflex-erect, smooth. Flowers dark blue. Spathes entire. It resembles the next species very much, but the leaves are very villose, with white hairs.

10. Bulb imbricate downwards, hard, the size of a pea. Leaves attenuated next the base, smooth, nerved

with the midrib thicker, upright, only half the length of the scape. Scape round, flexuose, upright, seldom simple, most frequently branched, the branches flexuose and spreading, from a span to a foot in height. Flowers generally four, five or six, seldom fewer, upright, blue, pointing one way, on a flexuose rachis. Spathes green at the base, brown at the tip, entire. This singular plant is distinguished from the rest by its flexuose rachis and its villose-rugged scape. It varies with the scape simple and branched.

11. Bulb netted, ovate. Leaves about five, linear-lanceolate, acute, most elegantly curled (or waved) on the edge, smooth, with a thick longitudinal nerve, not half the length of the scape. Scape simple or branched, round, smooth, flexuose, upright, many-flowered, about a foot in height. Flowers remote. Outer spathe three-toothed, striated, with as many nerves; inner two-toothed, with two nerves. Tube of the corolla greenish; segments of the border blue. Anthers fixed at one end, inflex. Stigmas from reflex spreading, club-shaped at the end. It varies with the scape simple and branched; with the corollas blue and white.

12. Bulb conical, imbricate downwards, truncated, with a sharp fibrous edge, smooth, the size of a pea. Scape simple, round, from flexuose upright, green-purple, smooth, a span high. Root-leaves two, sheathing, blunt, subfalcate-reflex, with the midrib raised, and the edge curled or waved, a finger's length, one third of the length of the scape: of the cotyledon one, embracing; ovate, obtuse, reflex at the tip, entire, smooth: stem-leaves two, spathe-form, remote; the lower convolute-sheathing with a long sheath, compressed at the tip, obverse: often curled, smooth, from an inch to three inches in length. Flowers pointing one way, upright, from three to nine. Rachis subflexuose, smooth. Outer spathe concave, blunt with a point, smooth, green with a purple tip, a little shorter than the tube, a line in length: inner nearly equal, bifid. Tube of the corolla a little enlarged, and somewhat curved, purplish: the three inner segments of the border entirely white; the three outer white within, purple-striated without. Anthers upright, inserted into the back above the base, linear-awl-shaped, shorter than the border, yellow. Capsule six-streaked.—The spike of flowers resembles that of *Gladiolus recurvus*, but the corolla is regular. In its curled leaves it resembles the preceding, but the leaves are lanceolate, two lines wide.

13. Bulb ovate, truncated, netted. Root-leaf single, ensiform, striated, recurved, smooth, a finger's length, only half the length of the scape. Stem-leaves one or two, spathe-form, embracing, striated, decurrent, smaller. Scape simple at bottom, paniced at top, striated, smooth, flexuose, upright, a span high. Branches alternate, dichotomous, compressed, fastigate. Flowers terminating on subumbelled-fastigate branches. Spathe green, with a blunt red tip. Tube of the corolla gradually widening, the length of the spathe: segments of the border lanceolate. Stigmas globular at the tip.—It varies with white and with blue flowers.

14. Bulb ovate, fibrous, even, the size of a hazel nut. Scape round, smooth, a hand or a span high or more. Leaves about three: the lower far-sheathing, linear, convex on both sides, with a raised line in the middle, very narrow, being scarcely half a line in width, upright, a little attenuated at the tip, entire, smooth, a little shorter than the scape, seldom equal to it: the two upper spatheous, very short. Flowers commonly two or three (seldom one) pointing the same way. Spathe convolute, lanceolate, acute, striated, smooth; the outer larger, the length of the corolla. Tube of the corolla whitish: segments of the border blunt, with a point. Stigmas revolute-spreading, purplish. Capsule scarcely angular, six-streaked.

15. Bulb netted, fibrous, the size of a hazel nut. Leaves nerved, smooth, shorter by half than the scape. Scape round, divided at the tip, capillary, upright, two feet high, with pedicel-shaped one-flowered branches. Flowers terminating the branches, or at the end of the scape, alternate, sessile, upright, whitish, netted-veined. Spathes scariosa, with dusky veins, toothed.

^f Curtis.

^g Thunberg.
ⁱ Salisbury.

^h Hort. kew.

toothed. The flowers in this species seem peduncled, but the branches are one-flowered^k.

The tube of the corolla is shorter than the bractes, broad-funnel-shaped; the border is contracted at the base, and the segments are linear^l.

16. Leaves acute, very narrow, shorter than the scape, with a raised line in the middle, smooth, about three; in the middle of the scape is a short leaf resembling the spathes. Scape filiform, upright, few-flowered, red, a finger's length, simple, branched or bifid. Spathe subinflated, green, very concave, striated, smooth, the length of the tube. The three outer segments of the border of the corolla are white within, red-streaked without; the three inner entirely white. Style longer than the stamens, shorter than the corolla, filiform, white.—It varies with a greenish corolla, white at the tips, and with a yellow corolla, with the base of the border dusky—with the scape one-flowered, many-flowered and simple, many-flowered and branched.—That with a dusky base resembles *I. maculata*; but it is several times smaller, branched, and the leaves linear and narrow.

17. Scape round, upright, smooth, sheathed, branched, a foot high. Branches filiform, naked, flexuose, lax, smooth, flowering. Leaves far-sheathing, about three, thickish, scarcely half a line in width, with a deep double streak, a span long. Flowers remote, frequently about ten. Outer spathe a little larger, smooth, striated, green at the base, ash-coloured at the tip, membranaceous, entire: inner green at the base; membranaceous, bifid and ash-coloured at the tip. Tube of the corolla very short, greenish-yellow: segments of the border concave, yellow; the three outer purplish on the back. Stigmas involute, villous, yellowish. Capsule obscurely three-cornered, six-grooved. Seeds somewhat kidney-shaped^m.

Thunberg suspects, that the *flexuosa* of Linneus's species (n. 24.) and the *scillaris* of the species and systema, may be the same with the *secunda* (n. 10.) of himself and Bergius. *I. scillaris* of Miller is *Gladiolus plicatus*.

18. Introduced from the Cape by Mr. Masson in 1774. It flowers in Aprilⁿ.

19. Scape simple or branched, somewhat compressed, striated, smooth, sheathed at bottom with leaves, from a hand to a foot in height. Leaves nerved and striated, distich, upright, smooth, a span long. Flowers three or more, large, with the rachis between the flowers flexuose. Spathe nerved and netted, gray with a dusky tip. Tube of the corolla only a line in length: border divided beyond the middle, but not to the tube: segments large, ovate-oblong, very blunt, spreading. Anthers linear, long, convex within, lamellose and white without. Capsule six-streaked. It varies with the corolla purple, red and white, yellow; with the scape very short and simple, higher and branched, and bulbiferous^o.

It was cultivated in 1758, by Mr. Miller, as appears from his figures.] According to him, the bulb has a netted coat; the stalk rises near a foot and half high; leaves at each joint, flat, smooth, embracing, of a lucid green, and differing greatly in size; the flowers are produced towards the top of the stalk, each having a short withering spathe; segments of the corolla lanceolate, equal, spreading, acute, white within with a pale purple stripe down the middle; on the outside they have broad deep-purple stripes; their base is marked with a yellow spot. The stalks have bulbs formed at each joint at the base of the leaves. It flowers in May and June.—In the Dictionary he says, that the corolla is of a sulphur colour. His specimen is in the Banksian herbarium, with the corolla purple on the outside.

[20. Bulb netted, the size of a hazel nut. Scape simple, round, upright, smooth, from a hand to a foot in height and more. Leaves four or five, linear, five-nerved, the middle nerve and edges thicker, acute, upright, shorter by half than the scape. Flowers pointing one way (very seldom one only) on two branches,

often from five to nine on a scarcely flexuose rachis. Spathes submembranaceous, awn-toothed. Corollas white-flesh coloured^p.

21. Root-leaves several, distich, narrow, ensiform, erect, acute, very finely striated, smooth, very unequal in length, the longest half a foot. Scape higher than the leaves, round, smooth, flexuose, almost upright. Flower terminating, erect, inodorous. Spathe scariose, smooth, two-valved; valves striated, broad, awn-toothed. Tube of the corolla narrow, incurved a little, dark violet colour, the length of the spathe: border spreading, an inch and half in diameter; segments oblong, blunt with a little point, equal, of a very deep and elegant purple-violet colour within, three of them of the same colour on the outside, but the three others alternately of a pale dirty violet; one of these with two on the side of it has a double band in the throat meeting at one end. Anthers pale yellow. Stigma trifid, filiform, white. It flowers in April^q.

22. It varies, as Mr. Salisbury observes, with whitish corollas having a purple star, violet-coloured and yellow. Mr. Miller has represented some of these in his 237th plate. Fig. 1. he says, has the corolla of a beautiful purple on the outside, but white within. The stem is terminated by two or three flowers. In fig. 2. the stalk is terminated by two large flowers; the outside of a violet-colour edged with white, the inside pale blue. The term *uniflora* is improperly applied to these; and therefore Mr. Salisbury has adopted that of *grandiflora*. Fig. 3. is one-flowered, and the corolla is of a most beautiful purple colour both within and without.—These were cultivated by Mr. Miller in 1758^r.

21. Mr. Salisbury gives this as very distinct from the preceding, but we have no farther description of it than is given in the specific character.

22. Bulb rounded-ovate, the size of a hazel nut, brown and striated on the outside. Leaves several, ensiform, upright, far-sheathing at the base, villous on both sides and at the edges, with a smooth striated sheath. Scape villose, the length of the leaves, few-flowered. Spathes three-valved, green, concave, acute; the outer valve much longer. Flowers alternate, sessile, upright, often three. Tube of the corolla pale purple: border very deep purple; segments nearly equal, lanceolate, acute, one-coloured, spreading very much, the same length with the tube. Filaments purple, half the length of the border of the corolla. Anthers oblong, black-violet. Germ hirsute; green. Stigma trifid, of the same colour with the corolla, with the segments widening at the tip^s.

This is not the *villosa* of Jacquin (collect. 167. ic. vol. 2. t. 284.) though he says it differs from the *villosa* of the Kew Catalogue, only in the colour of the flower.

Mr. Salisbury refers both the *villosa* of the Kew Catalogue and the *purpurea* of Jacquin to his *I. flabeliformis*, and we have followed him in considering them as one plant. He observes that it differs from the *Gladioli* only in the regularity of the corolla.

This species was introduced into the royal garden at Kew from the Cape in 1788 by Patrick Russell, M.D.^t

23. Root jointed like a necklace; joints several in a ring, depressed, approximating, fleshy, rufescent. Root-leaves sheathing the bottom of the scape, acute, striated, smooth, a foot long or a little more. Scape round, smooth, upright, the thickness of a writing pen at bottom, divided at top into capillary, nodding, flexuose branches, a fathom in height. Spathes membranaceous, jagged. Corollas on the branches alternate, large, flesh-coloured, with a short tube. This is the loftiest of all the *Ixias*, and the large pendulous corollas are very handsome^x.]

24. Bulb very small, round. Leaves three or four, long, slender, grass-like, dark green. Stem very slender, round, a foot and half high: at the top the flowers are collected in a spike sitting close to the stalk, each having a thin, dry spathe, which covers the capsule after the flower is fallen. The corolla is pure

^k Thunberg. ^l Salisbury. ^m Thunberg. ⁿ Hort. kew.

^o Thunberg.

^p Thunberg. ^q Jacquin. ^r Mill. fig. ^s Hort. kew.

^t Jacquin.

^u Hort. kew.

^x Thunberg.

white, and small. Capsule small, round. It flowers at the end of may, and the seeds ripen in july.

[That which is figured by Mr. Curtis is a variety with a purple eye. He says that the flowers are fragrant, and come forth in april or may.—It was cultivated in 1757 by Mr. Miller^y. His specimen is in the Bankian herbarium.

Thunberg doubts whether the *Ixia flexuosa* of Linneus's species may not be the same with his *secunda*.

25. Bulb the size of a hazel nut. Leaves three or four, many-nerved, upright, smooth, half the length of the scape. Scape round, smooth, upright, many-spiked, from a foot to two feet in height. Branches alternate, capillary, upright, a finger's length. Flowers on the scape and branches in spikes, on a flexuose rachis of a finger's length. Spathes submembranaceous and awned. It varies with the corollas yellow and violet, of one colour^z.]

Leaves four or five, six or seven inches long. Stalk slender, ten inches high, from the side of which come out one or two clusters of flowers on short peduncles, and at the top of the stalk the flowers grow in a loose spike; they are of a pure white, and appear in may: the seeds ripen in july.—[Cultivated in 1757, by Mr. Miller^a.

26. Scape four or five spans in height, the thickness of Rie straw, upright, round, even, yellowish, naked at top and branched. Branches simple, alternate, naked, flowering, distant. Leaves about six, acute, three spans long, striated and nerved, smooth, yellowish green, upright, radical; inner sheathing. Flowers in spikes, yellow. Spikes filiform, several on a scape, with the flowers alternate, distant, nodding; rachis somewhat flexuose. Spathes bivalve: valves oblong, acute, membranaceous, whitish, striated, concave, embracing each other, involving the germs, of which they are double the length; one is keeled, the other two-angled, with a bifid tip^b. Tube of the corolla two, three or four inches in length, funnel-form; border recurved at top, segments linear, the outer retuse, the inner narrower^c.

This species is easily distinguished by the extraordinary length of the tube of the corolla. Thunberg ranges it under *Gladiolus*, because this tube is a little curved; though he confesses that it has the appearance of an *Ixia*.

It was introduced in 1774, by Mr. Masson, and flowers here from april to june^d.

27. Root consisting of several little bulbs. Scape sheathed with leaves, round, from flexuose upright, many-spiked at top; spikes alternate, wand-like; a span high. Leaves two or three, alternately far-sheathing, striated, smooth, shorter than the scape, the upper ones gradually shorter. Flowers very small. Spikes linear, a finger's length, upright. Spathes with a membranaceous, white margin. Tube of the corolla scarcely longer than the spathes. It varies with the scape simple and branched; with the corollas white and blue^e.

Introduced in 1774, by Mr. Masson. It flowers in june and july^f.

28. Scape simple and many-spiked, somewhat woody, sheathed with leaves round, smooth, stiff and straight, almost the thickness of a finger, from a foot to four feet in height. Leaves sheathing, shorter than the scape, half an inch wide, with a thick yellowish vein along the middle and at the edge, marked in lines with smaller raised yellowish veins, smooth, upright; the lower longer, a foot and more long; the upper only a span in length, pressed close. Flowers large, pendulous. Spike with alternate flowers, from a finger to a foot in length, with a flexuose rachis^g.

29. Bulb flattened. Scape simple, round, smooth, longer than the leaves, from six inches to two feet in height. Leaves striated, withering at the end. Flowers in a sort of spike, containing from ten to twenty flowers: each peduncle is surrounded at the base with a spathe, the segments of which terminate in a short

awn. Corolla very deeply six-parted, of a bright red colour^h.

Mr. Salisbury, who in his specific characters of the *Ixias*, gives the proportion between the tube and the limb or border, says that the latter is one and a half longer than the former; that the border is curved inwards and spreads very much: that the segments are elliptical, retuse, the inner ones narrower.

It was introduced in 1779, by William Pitcairn, M.D. and flowers in aprilⁱ.

30. Bulb double the size of a hazel nut. Leaves three, four, or five, many-nerved, half the length of the scape. Scape usually simple, seldom many-spiked, round, upright, from a span to a foot high and more. Branches filiform, upright, or spreading very much. Flowers in terminating spikes, on a flexuose rachis. Spathes membranaceous, gray at the base, brown at the tip, somewhat jagged. The corolla, above the mouth of the tube, has a dusky spot at the base of the border. It bears so much resemblance to *I. erecta*, (polystachia, n. 25.) as to differ in little else, besides the spot in the corolla^k.]

Mr. Miller says that the bulb is oval and compressed; that the leaves are smooth, near a foot long, and a quarter of an inch broad, with two sharp edges, of a deep green, and ending in acute points. Stalk slender, stiff, a foot and half long, naked to the top, where it is terminated by a round bunch of flowers, each inclosed in an oblong spathe, which is permanent, and splits open on one side. Flowers on short peduncles, deep yellow with a dark-purple bottom.

[It was cultivated in 1757 by Mr. Miller, and flowers in may and june^l.

31. Leaves linear-lanceolate, acute, quite entire, flat, smooth, a span long. Scape round, smooth, simple. Flowers remote. Bractes two at the base of each germ, broad, membranaceous, cloven, scarcely half an inch long. Corolla fulvous; tube cylindric-bell-shaped; narrow; segments of the border ovate, blunt, slightly emarginate, more than an inch in length, attenuated at bottom into broad claws; the three outer gibbous at bottom (whence the border at the base is triangular-pitcher-shaped), marked in the middle with a dark red spot, and within have a raised keel, at top spreading; the three inner almost upright, flat, unspotted: at the throat there is a greenish yellow star-like spot.

Introduced in 1774, by Mr. Masson. It flowers in may^m.

Mr. Salisbury changes the name from *deusta* to *gibba*, choosing to denominate it from the form rather than the colour of the flower.

32. Bulb a little larger than a hazel nut. Leaves about five, reflex-subfalcate, many-nerved, from an inch to a finger's length, half or one-third of the length of the scape. Scape simple, round or branched, somewhat flattened, flexuose, upright, smooth, from a hand to a span in height. Branches spreading very much, naked, like the scape. Bractes gray at the base, ferruginous at the tip, slightly toothed and jagged. Flowers pointing one way, handsome, bell-shaped, with a short tube, orange-coloured with a paler hyaline or transparent mark above the mouth of the tube; seldom two, but most commonly five or seven.

It varies with a short simple few-flowered scape, and a dark spot above the windowed or hyaline one: with a lofty, many-spiked, many-flowered scape: and with bright red flowers.

This is one of the handsomest of the *Ixias*, and like other sorts becomes handsomer and more branched by cultivationⁿ.

Mr. Salisbury thinks that the name of *hyalina* agrees better with this species; and gives the name of *similis* to the *hyalina* of the younger Linneus's supplement; *squakida* α, of the Kew Catalogue. See the next species.]

According to Mr. Müller, the bulb is oval, small, a little compressed, and has a smooth dark-coloured coat; whence come up three or four narrow, thin, flat,

^y Hort. kew.

^b Bergius.

^c Thunberg.

^z Thunberg.

^a Salisbury.

^f Hort. kew.

^g Hort. kew.

^h Hort. kew.

ⁱ Thunberg.

^k Schneevogt.

^l Hort. kew.

^m Hort. kew.

ⁿ Ibid.

^o Thunberg.

^p Thunberg.

smooth leaves of different lengths, some four or five inches long, others seven or eight to near a foot; near half an inch broad where widest, but narrow at both ends and terminating in points. The flower-stalk rises a little above the leaves; it is very slender, naked, except at the joint, where it is crooked, and has a small leaf embracing it. Flowers terminating, in a round cluster; each having a short, withered, cloven spathe. Tube short and swelling; segments of the border broad, blunt, spreading, equal, bright orange or deep gold-colour, with a large black spot at the base.

[It was cultivated in 1758, by Mr. Miller, and flowers in may and june^o.

33. α . Very nearly allied to the preceding, but the segments of the border in the corolla are narrower and more pellucid, the veins therefore stand more out; they are also slightly emarginate. The colour in this is pale rufescent, or dirty flesh-colour, with a little tinge of yellow^p.

According to Salisbury, the border of the corolla is five times as long as the tube in the preceding, but only three and a half in this; it spreads at top in this, but is curved back in that: in the preceding the whole sides are hyaline at bottom, whereas the edges are only so in this: the stigmas reach up to the tip of the anthers in that, but in this they are lower.

β . Leaves acuminate, strict, flat, smooth, scarcely a span in length. Scape round, smooth, twice as long as the leaves. Flowers remote. Bractes two at the base of each germ, membranaceous, cloven at the tip, scarcely half an inch in length. Corolla pale-yellow, with dusky veins; tube funnel-form; segments of the border ovate-oblong, bluntish, quite entire; outer near the tip sometimes red; one of the inner a little wider than the others.

Introduced in 1774, by Mr. Masson. It flowers in may^q.

Mr. Salisbury makes this a species of *Gladiolus*, and gives this specific character—limb of the corolla four times as long as the tube, curved inwards spreading, segments elliptical, with three parallel lines on the outside; the uppermost larger, the outer ones retuse.

34. Bulb closely involved in the rudiments of leaves, larger than a hazel nut. Leaves three or four, lanceolate-ensiform, thicker about the edges and along the midrib, the edges turned back, very finely striated, smooth, upright, a finger's length. On the scape a spathe-form leaf or two. Scape round, compressed, upright, smooth, twice as long as the leaves. Flowers about six, purplish white. Spathes ash-coloured, ferruginous at the tip, blunt, entire.

35. Scape branched or simple, round, flexuose, smooth, a foot high. Leaves striated, smooth, several times shorter than the scape. Spike of flowers long, interrupted, flexuose. Spathe membranaceous, marked with six lines, the length of the tube; the outer larger, keeled, three-toothed. Tube of the corolla greenish, short; segments of the border purple. Filaments generally three, sometimes five or four, inserted into the mouth of the tube, half the length of the border, filiform, whitish. Anthers ovate, incumbent or nodding horizontally, somewhat compressed, twin, yellow. Stigmas generally three, sometimes five or four, reflex-spreading, a little shorter than the filaments, blunt, a line in length, feathered. Capsule three-cornered, six-grooved. When there are four filaments, two often are united into one body with four stigmas, the anthers separate or united. It varies with three-stamened flowers having three stigmas; with four-stamened flowers having four stigmas; and with five-stamened flowers having five stigmas.

36. Bulb conical, imbricate downwards, truncated with a sharp fibrose margin, the size of a pea. Scape simple and branched, smooth, purple, at top, many-flowered. Leaves distich, striated, smooth, shorter by half than the scape. Flowers alternate, one, two or more. Tube of the corolla red: the three inner segments of the border rounded, white; the outer white within, red without. Stigmas flexuose-involute, rough-haired.

It varies with the scape simple or branched, a hand or a span in height; with flowers alternate or pointing one way; with the rachis very flexuose or scarcely so at all.

37. Bulb globular, smooth, less than a pea. Root-leaves two, ovate, blunt, smooth, embracing by the inner edge, and there cut out as it were for the passage of the scape, spreading, resembling one bifid leaf; below the middle of the scape there is a solitary leaf like a spathe. Scape round, upright, smooth, one-flowered or many-flowered, a finger or a hand in length. Spathe smooth, blunt and subcrenate at the tip; the outer green, shorter than the tube. Tube of the corolla red: segments of the border very blunt, spreading, on the outside rufescent streaked with red, on the inside white streaked with red. Anthers brown, upright. Stigmas small, revolute, rough-haired. Sometimes, but very seldom, the stem puts out a one-flowered stemlet in the middle^r.

38. Scape round, fistulous, jointed, upright, simple at bottom, panicled-dichotomous or trichotomous at top, smooth, almost the thickness of a finger, two feet high. Leaves alternate, embracing, equitant, acute, entire, striated, smooth, the lower a little longer, about half the length of the stem, a span long and more. Flowers from the tips of the branches of the panicle in umbels, from three to seven, peduncled. Peduncles striated, one-flowered, an inch long. Spathe under the divisions and the umbel, withered. Corolla connected only by the base, yellow and purple spotted: claws narrow; border oblong, spreading, blunt, entire, three alternate ones a little narrower. Filaments capillary. Anthers linear. Capsule oblong^s.

There is a disagreement about the genus of this plant. Thunberg places it with the *Moræas*, and says that it cannot be referred to the *Ixias*, because the flower is not in the least tubular, but six-petalled.

Loureiro describes the bulbs as cylindric, branched, with long fibres. Leaves lanceolate-linear. Stem three feet high, two-edged at bottom, round at top. Flowers large, terminating, golden-coloured, dotted with red, in an upright few-flowered panicle. He would unite the two genera of *Ixia* and *Moræa*, as scarcely differing.

Mr. Salisbury makes it a *Ferraria*; which genus he says differs from *Iris* only in having no tube to the corolla. This species, he observes, has the seeds as in *Iris foetidissima*, with a pulpy arillus.

The accurate Gærtner describes the capsule as inferior, ovate, contracted towards the base, rounded-three-cornered, coriaceous. Receptacle awl-shaped, three-sided, free in maturity. Seeds several, six to ten in each cell, spherical, smooth, black, shining, berried, fixed in a double row to the angles of each cell.]

In India, the stalks rise to the height of five or six feet, but in England they are seldom more than half that height. It has a pretty thick fleshy root, divided in knots or joints of a yellowish colour, sending out many fibres; the stalk is pretty thick, smooth, and jointed, leaves a foot long and one inch broad, with several longitudinal furrows, embracing the stalks with their base, ending in acute points; the upper part of the stalk divaricates into two smaller, with a foot-stalk arising between them, which supports one flower; the smaller branches divaricate again in the same manner into foot-stalks, which are two inches long, each sustaining one flower. At each of these joints is a spathe embracing the stalk, these at the lower joints are three inches long, but at the upper not more than one inch, ending in acute points and permanent; the flowers are of a yellow colour within, and variegated with dark red spots; the outside is of an Orange colour. These appear in july and august, and in warm seasons are succeeded by seeds.

[It is a native of the East Indies, China, Cochinchina and Japan. Cultivated by Mr. Miller in 1759^t.

The Indians consider it as an antidote to poisons in general, and regard the bruised root as peculiarly efficacious in curing the bite of the serpent called *Cobra de Copella*^u.

^o Hort. kew.

^p Ibid.

^q Ibid.

^r Thunberg, diss.

^s Thunb. jap.

^t Hort. kew.

^u Hort. malab.

39 to 54. The remaining species are taken from the rich Catalogue of Mr. Salisbury's botanic garden at Chapel-Allerton, published by himself. Of these he has given no descriptions, but only copious specific distinctions.—They are all natives of the Cape.

39. Corolla violet-coloured, limb three-fourths longer than the tube.

40. Border of the corolla one and one-third longer than the tube.

41. Border of the corolla four-sevenths longer than the tube. Colour white with a green base.

42. Border of the corolla one and a half longer than the tube. Herb bright green, smooth, rigid^x.

43. Leaves all radical, a foot long, ensiform, striated, smooth, quite entire, withering at the tip. Scape almost two feet high, round, slender, many-flowered, sometimes branched. Spathe small, two-leaved. Corolla deeply six-parted; segments ovate-oblong, obtuse, rose-purple coloured, with a deep purple base^y. The limb of the corolla is longer by half than the tube.

44. Limb of the corolla as long again as the tube^z.

45. Leaves all radical, very long, linear, grass-like, smooth, glaucous green. Scape three or four feet high and more, round, simple. Flowers peduncled, and forming a dense pyramidal spike^a. Border of the corolla three times longer than the tube^b, deeply six-parted, green or blue-green, with a dark-purple base. It flowers from may to august^c.

46. Limb of the corolla five times longer than the tube. Colour deep red.

47. Corolla vermilion-coloured with a variegated star at the base: limb twice as long as the tube.

48. Corolla orange-coloured with a dark base. Limb one-third longer than the tube.

49. Corolla pale yellow: limb longer by half than the tube.

50. Limb of the corolla the same length with the tube.

51. This species is singular in its almost total want of a tube, but in other respects it has the characters of this genus.

52. This has its name from its flowering very slowly in our stoves. The limb of the corolla is six times longer than the tube.

53. Limb of the corolla three and a half longer than the tube.

54. Limb of the corolla three and a half longer than the tube.

The three last species, with the *crocata*, *squalida*, and *deusta*, are very nearly allied, and seem to be produced from a mixture with each other^d.

Numerous as the above list of *Ixias* is, there are many more species not yet determined, besides numberless varieties.]

Several flowered many years since in the Chelsea garden: one purple on the outside and white within; another with white flowers, having a blue stripe on the outside of each petal; a third white with yellow bottoms; besides many more raised from seeds. More than thirty sorts or varieties are mentioned in a catalogue of Herman's. The roots of most, if not all the sorts are frequently eaten by the inhabitants at the Cape of Good Hope.

PROPAGATION AND CULTURE.

Several of the *Ixias* ripen their seeds here, and may be propagated that way, by sowing the seeds in pots, and plunging them into a moderate hot-bed, which will bring up the plants much sooner than when they are sown in the full ground; when the plants are fit to remove, they should each be set in a small pot filled with light earth, and if they are placed under a frame till they have taken good root, it will greatly forward their growth. Afterwards they may be placed in the open air in a sheltered situation, where they may remain till the autumn, when they must be placed under a frame to screen them from frost. In the spring the plants may be turned out of the pots,

and planted in a warm border, where they will abide through common winters very well; but in severe frosts they are often killed, unless they are covered with tan, or some other covering: a few therefore of the plants should be kept in pots, and sheltered under a frame or in a dry stove in winter.

They multiply very fast by offsets, so that when they are once obtained, there will be no occasion to raise them from seeds. Most of them will thus flower the ensuing season; whereas those from seeds are three or four years before they flower.

The stalks and leaves of these plants decaying to the root in autumn, the roots in borders should then be covered two or three inches thick with tan, to keep them from frost, and also from mice, who are very fond of them. The spring, before the roots shoot, is the best time to remove and part them; but this should not be done oftener than every third year, for when they are often parted they will be weak and not flower well.

[IXIA. See *Dilatris*, *Gladiolus*.

IXINA. See *Krameria*.]

IXORA. (So named from a Malabar Idol.)

Lin. gen. n. 131. Reich. 137. Schreb. 167. Gærtn.

t. 25. & 95. Juss. 203.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Stellatae*. *Rubiaceae*, Juss.

GENERIC CHARACTER.

CAL. Perianth four-parted, very small, upright, permanent.

COR. one-petalled, funnel-form. Tube cylindric, very long, slender. Border four-parted, flat: divisions ovate.

STAM. Filaments four, above the mouth of the corolla, very short. Anthers oblong.

PIST. Germ roundish, inferior. Style filiform, length of the tube. Stigma two-cleft.

PER. Berry roundish, two-celled.

SEEDS by fours, convex on one side, cornered on the other.

OBS. Seeds solitary! Partition perforated through the middle. Gærtn. S.

ESSENTIAL CHARACTER.

Cor. one-petalled, funnel-form, long, superior. Stam. above the mouth. Berry four-seeded. (Seeds solitary, with a fleshy soft albumen. G.)

SPECIES.

1. *Ixora coccinea*. Scarlet *Ixora*.

Lin. spec. 159. Syst. 152. Reich. 1. 311. fl. zeyl.

n. 54. Osb. it. 220. Gærtn. fruct. 117. Lour.

cochinch. 75. Curt. magaz. 169. Burm. zeyl. 125.

t. 57. Pluk. phyt. t. 59. f. 2. (Jasminum.) mant.

t. 364. f. 1. (Arbor indica.) Rheed. mal. 2. 17.

t. 13. (Schetti).

Leaves oval half-stem-clasping, flowers in bundles.

2. *Ixora alba*. White *Ixora*.

Lin. spec. 160. Reich. 1. 311. fl. zeyl. n. 55.

Gærtn. fruct. 2. 88. Lour. cochinch. 76. Pluk.

phyt. t. 109. f. 2. (Jasminum). Rheed. mal. 2. 19.

t. 14. (Bemschetti).

Leaves lanceolate-ovate, flowers in bundles.

3. *Ixora americana*. American *Ixora*.

Lin. spec. 160. Reich. 1. 312. amoen. 5. 393.

Leaves in threes lanceolate-ovate, flowers thyrsoid.

4. *Ixora fasciculata*.

Swartz prodr. 30.

Leaves ovate-elliptic, those of the branchlets subfascicled, peduncles subtriflorous.

5. *Ixora multiflora*.

Swartz prodr. 30.

Leaves lanceolate-ovate bundled, peduncles aggregate one-flowered very short, berries one-seeded.

6. *Ixora montana*.

Lour. cochinch. 76.

Leaves turbinate-oblong, cordate at the base, flowers fastigate.

7. *Ixora novemnervia*.

Lour. cochinch. 76.

Stem scandent, leaves nerved rough, cymes terminating.

8. *Ixora violacea*.

Lour. cochinch. 76.

Leaves nerved hairy, flowers axillary.

9. *Ixora*

^x Salisbury. ^y Schneevogt. ^z Salisbury. ^a Schneev.

^b Salisbury. ^c Schneev. ^d Salisbury.

9. *Ixora parviflora*.*Vahl symb.* 3. 11. t. 52.*Leaves subsessile lanceolate-oblong, panicle terminating.]*

DESCRIPTIONS, &c.

1. Stem woody, five or six feet high, sending out many slender branches covered with a brown bark. Leaves opposite, or three or four at a joint. Flowers terminating in clusters; they have very long slender tubes, are cut into four ovate segments, and are of a deep red colour.

[According to Loureiro's description, the stem is shrubby, manifold, upright, three feet high. Leaves ovate, quite entire, opposite, smooth, sessile not embracing. Flowers scarlet, fascicle-cymed, fastigiate, terminating. Corolla salver-shaped rather than funnel-shaped, with a very long slender tube, and a small equally quadrifid limb. Calyx very small, quadrifid, of the same colour with the corolla. Style longer than the tube; with an oblong, bifid stigma. Filaments very short at the mouth of the tube, with oblong anthers.

Gærtner describes the berry as fleshy, ovate-globular, crowned with the four upright acuminate teeth of the calyx, black, two-celled: cells, clothed with their proper white membrane, entirely separate from the seeds. Receptacle a fleshy substance adhering to the perforation of the partition, and diffused over the whole internal surface of the seed. Seed in each cell one, ovate-rounded, on one side convex smooth and naked; on the other slightly concave, covered with a spongy substance from the receptacle, ferruginous or rufescent.

Linneus and Adanson assign four seeds to the fruit, according to the Hortus Malabaricus. Gærtner could never discover more than two. Loureiro says, the berry is small, emarginate, crowned, two-celled with one seed in each cell, rounded on the outside, flat on the inner side. Gærtner refers to the *Flamma sylvarum* of Rumphius (4. t. 46.) which is not our plant. Loureiro thinks the description in p. 105 of that work not very different; and fig. 47, not 47, likely to be the plant.

Native of the East Indies, China, and CochinChina. Introduced here in 1690, by Mr. Bentick^a. Cultivated by Mr. Miller in 1768; and since by Dr. Fothergill at Upton, Mr. Thoburn, nurseryman at Brompton, &c.^b]

2. Stem woody, six or seven feet high, sending out weak branches. Leaves opposite, sessile. Flowers terminating in small clusters; they have long slender tubes, divided into four segments at top, and are white, without scent.

[Stem, according to Loureiro, shrubby, branched, upright, three or four feet high. Leaves ovate-oblong, acute, quite entire, smooth, opposite, subsessile. Flowers white, fascicle-cymed, terminating. Berry, according to Gærtner, twin, broadest transversely, crowned with the four-toothed calyx, fleshy, two-celled, red. Receptacle pulpy, from the partition, filling the cavity of the seed. Seeds solitary, hemispherical-bullate.

Native of the East Indies and CochinChina. Cultivated by Mr. Miller in 1768.]

3. This rises with a shrubby stalk four or five feet high, sending out slender branches opposite. Leaves opposite, six inches long, two inches and a half broad, on short foot-stalks. Flowers at the ends of the branches in a loose spike; they are white, and have a scent like *Jasmin*, whence in Jamaica and other islands of the West Indies, where this is a native, it is called Wild *Jasmin*. [The Wild *Jasmin* however of Jamaica is *Pavetta*? one of Browne (142), which is the *Coffea occidentalis* of Linneus.

In the *amoenitates academicae* it is said to be a tree, with the leaves in threes, on long petioles, lanceolate-ovate, smooth, quite entire, with a stipule to each pe-

^a Hort. kew.^b Curtis.

tiole; the seed involved in an arillus, whence it is allied to the *Coffea*; the tube and border of the corolla much shorter than in the other *Ixoras*.

4, 5. Both natives of Jamaica^c.

6. Stem shrubby, upright, branched, four feet high. Leaves broader at the end, blunt, cordate at the base, quite entire, smooth, opposite, subsessile. Flowers terminating, scarlet. These and the fruit of the same form with the two first species, and perhaps only a variety.

7. This is a large climbing branched unarmed shrub. Leaves ovate-lanceolate, quite entire, nine-nerved, subsessile, opposite. Flowers white, terminating, in hemispherical cymes. Tube of the corolla slender and very long; border quadrifid. Stamens above the throat. Stigma ovate, bifid. Berry inferior, two-celled, one-seeded.

8. This also is a large climbing branching unarmed shrub. Leaves lanceolate, nine-nerved, quite entire, hairy, subsessile, opposite. Flowers violet-coloured in axillary cymes; with the corolla and calyx quadrifid. Berry inferior, two-celled, with one ovate rough seed in each cell.—These three are natives of CochinChina^d.

9. Branches smooth, jointed, round at bottom but compressed at top. Leaves on very short petioles, opposite; from two to three inches in length, very smooth, shining above, veined, quite entire, acute. Stipule on each side short, acuminate. Panicle a hand in length, brachiate. Partial peduncles opposite, remote, with a small leaf at the base of each, three-parted with the branches three-parted again; the last pedicels in bundles. Flowers scarlet (white). Calyx minute, with four blunt teeth. Corolla funnel-form: tube filiform, a little thicker at top; border four-cleft; segments linear, blunt. Stamens a little longer than the corolla. Style the length of the tube of the corolla, when examined by a magnifier appearing to have hairs thinly scattered over it. Stigma emarginate.

It is allied to *I. coccinea* (next to which it ought to be placed); but the flowers are only one-fourth of the size, and disposed in racemed elongated corymbs. The leaves in *I. coccinea* are sessile not embracing, and it varies with the segments of the corolla subovate and blunt, or lanceolate and acute.—Native of the East Indies^e.]

PROPAGATION AND CULTURE.

These plants are propagated by seeds, when they can be procured from the countries where they grow naturally, for they do not perfect any seeds in England. They should be sown in small pots as soon as they arrive, and plunged into a hot-bed; if they arrive in autumn or winter, the pots may be plunged in the tan-bed in the stove, between the other pots of plants, so will take up little room; but when they arrive in the spring, it will be best to plunge them in a tan-bed under frames; the seeds will sometimes come up in about six weeks, if they are quite fresh; otherwise they will lie in the ground four or five months, and sometimes a whole year, therefore the earth should not be thrown out of the pots till there is no hopes of their growing; when the plants come up, and are fit to remove, they should be each planted in a separate small pot, filled with light earth, and afterwards treated in the manner directed for the *Coffee-tree*.

They may also be increased by cuttings during the summer months, and planted in small pots plunged into a moderate hot-bed, covering them close either with bell or hand-glasses to exclude the external air, shading them carefully from the sun during the heat of the day, until they have put out good roots, when they should be parted, and each put into a separate pot, treating them as the seedling plants.

[Mr. Curtis remarks, that it is customary in this country to treat the *Ixora* as a stove plant; but that it may perhaps be less tender than we are aware of.]

^c Swartz.^d Loureiro.^e Vahl.

ROOTS

I

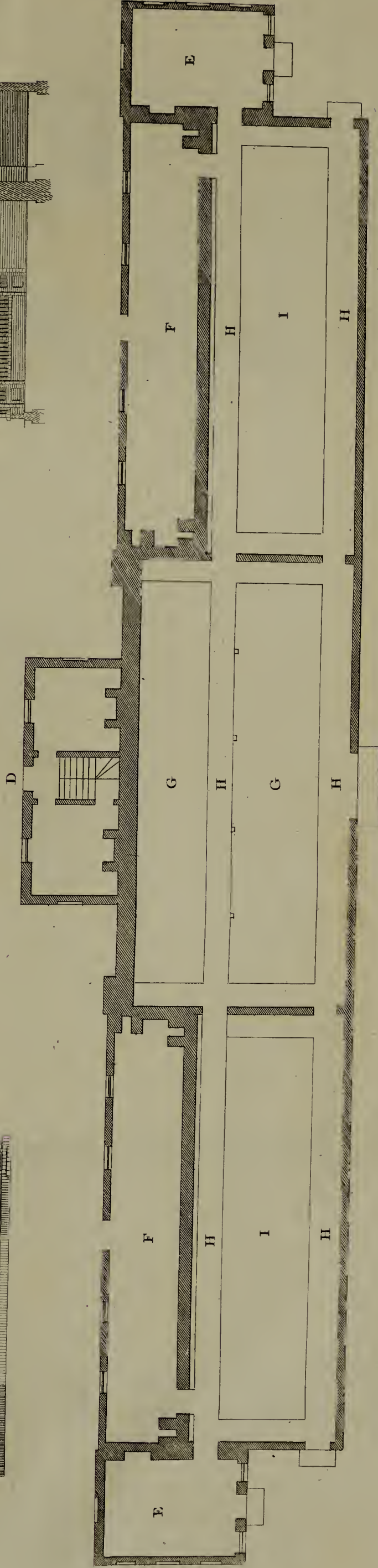
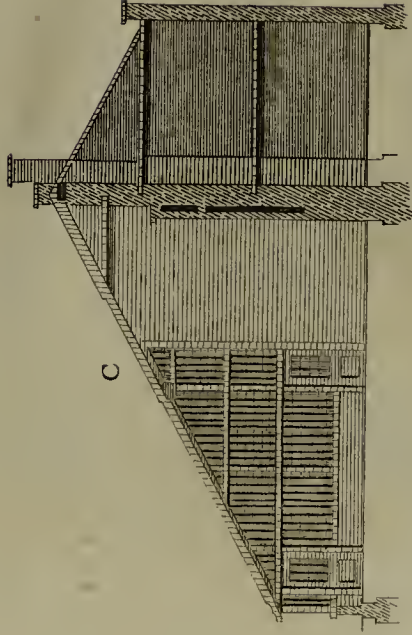
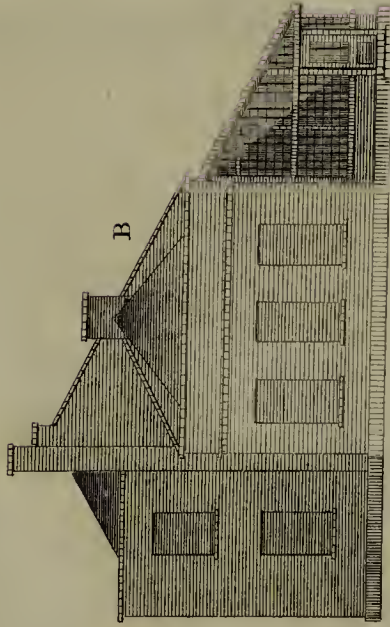
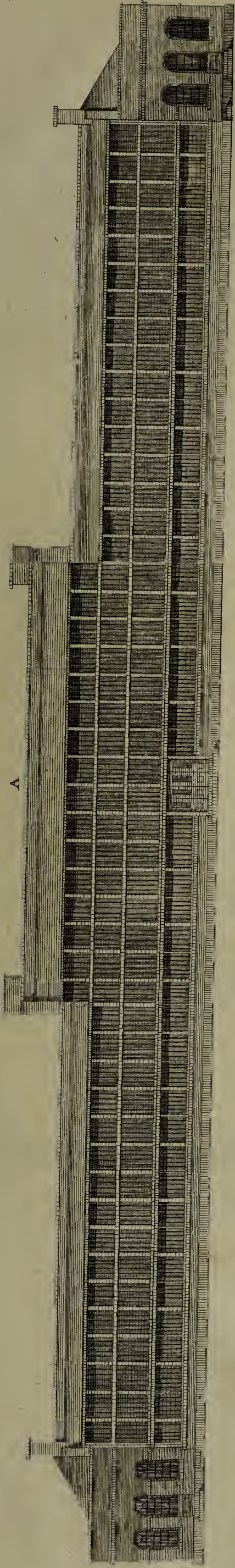


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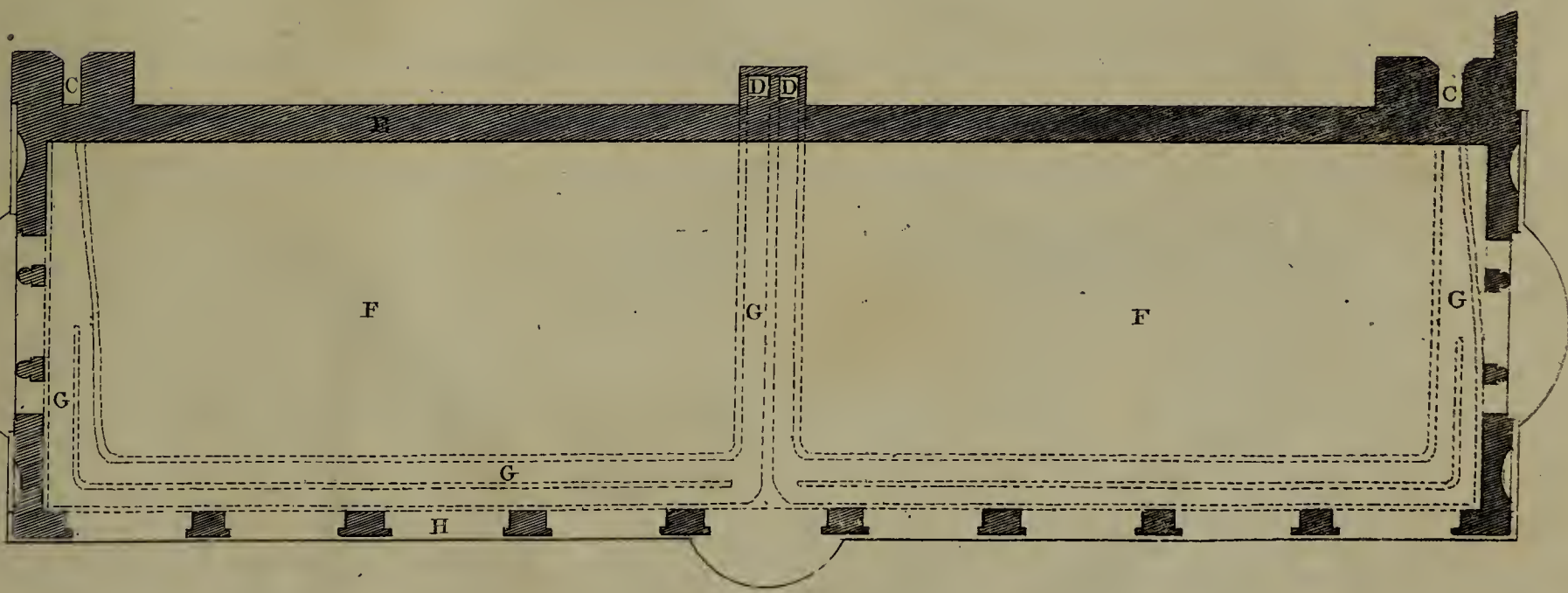
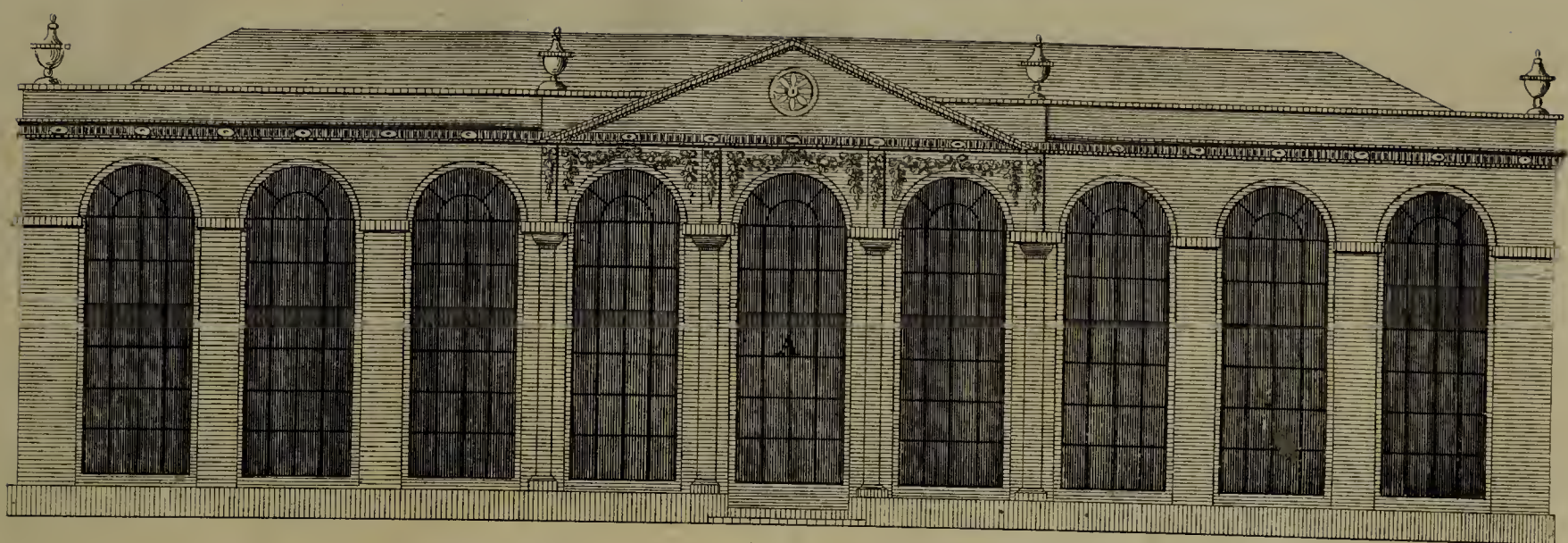
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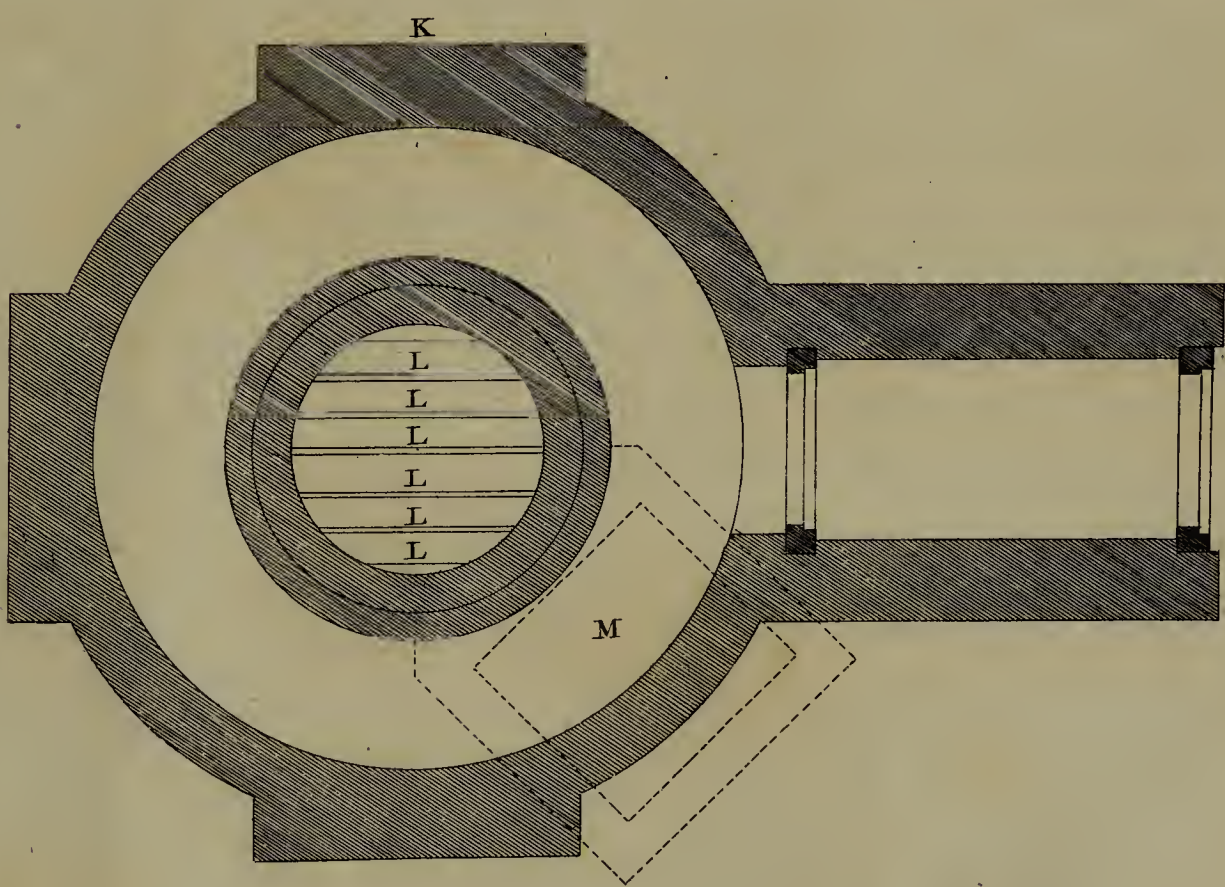
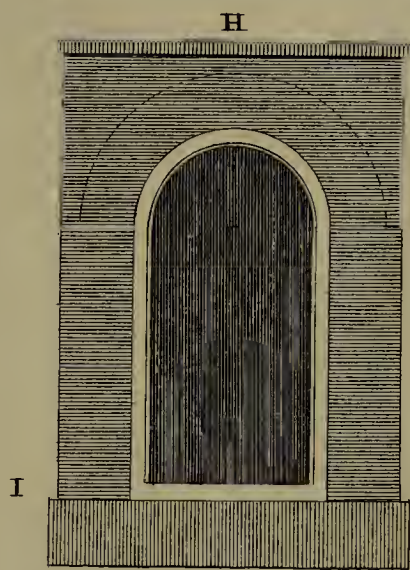
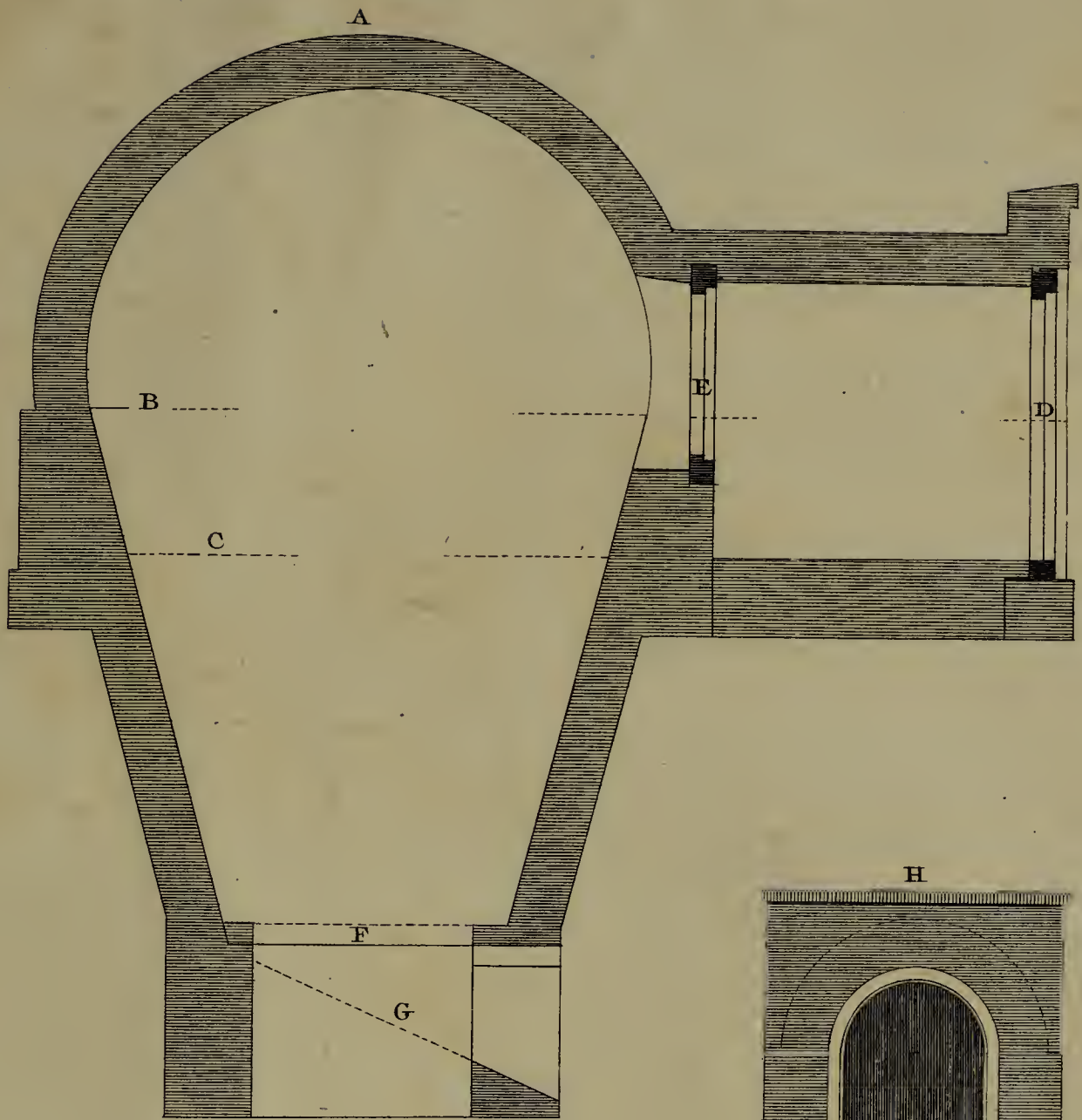
A CONSERVATORY.

Published as the Act directs, December 12, 1793, by J. H. B. (Birmingham), St. Paul's Church, Yard.



140 feet

PLAN and ELEVATION of a GREENHOUSE.
Published as the Act directs, Feb. 27, 1796, by J. G. Barington, St. Paul's Church Yard.



PLAN and SECTION of an ICE-HOUSE.
Published as the Act directs. May 7, 1796, by F. & C. Rivington, St. Paul's Church Yard.

